

#### 2008 Joint Chemical Biological, Radiological and Nuclear (CBRN) Conference & Exhibition

"Enabling the Force at Home and Abroad"

24-26 June 2008

Fort Leonard Wood, MO

Agenda

Wednesday, June 25, 2008

Session 1: Homeland Defense and CBRN Consequence Management Baker Theater

#### NORTHCOM

• COL James Brown, Chief, Force Protection, Mission Assurance Division, USNORTHCOM

#### JTF Civil Support

• LT Col J. Berrios, Joint Task Force Civil Support, USNORTHCOM

#### **Domestic Nuclear Detection Office**

• Dr. Chuck Gallaway, Deputy Director, Domestic Nuclear Detection Office, DHS

#### 415th Chemical Brigade

• BG Jim Cook, Commander

#### USMC

• MAJ Stan Bacon, Operations Officer/Mission Commander, Chemical Biological incident Response Force, USMC

#### **PM Guardian**

• COL Mark Malatesta, Joint Program Manger for Guardian, JPEO CBD

Thursday, June 26, 2008

#### Session 2: Joint CBRN Missions Baker Theater

#### **Keynote Address**

• Dr. G. Peter Nanos, Associate Director for Research and Development, DTRA

#### OSD, SA CBD&CD

• Mr. Jean Reed, Special Assistant for Chemical and Biological Defense and Chemical Demilitarization, OSD

#### Joint Staff, Joint Requirements Office

• COL Patrick Sharon, Deputy Director, Joint Requirements Office for CBRN Defense (J-8), The Joint Staff

#### Joint Science & Technology Office

• Mr. Fred Crowson, Chief, Physical Science and Technology Division, Joint Science & Technology Office for Chemical and Biological Defense, DTRA

#### Joint T&E Executive

• Ms. Janet Garber, Army Test & Evaluation Executive, and Joint Chemical and Biological Defense Test & Evaluation Executive

#### JPEO CBD

• MG Steve Reeves, Joint Program Executive Officer for Chemical Biological Defense

BG Tom Spoehr, Commandant, US Army (CBRN School), TRADOC





# JOINT CBRN CONFERENCE & **EXHIBITION**

25-26 June 2008













## Wednesday, 25 June

0900-0930 Opening Comments

**NDIA** Welcome

MANSCEN Welcome

Chief of Chemical Welcome

0930-1000 Keynote Address – Dr. S. Bucci

1000-1030 NORTHCOM – COL J. Brown

1030-1100 <u>JTF Civil Support</u> – LTC J. Berrios

1100-1130 <u>Domestic Nuclear Detection Office</u>

Dr. C. Gallaway

1130-1330 Lunch in Exhibit Pavilion







### Wednesday, 25 June (continued)

1330-1400	415 <sup>th</sup> Chemical Brigade – BG J. Cook
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1400-1430 CBIRF – MAJ E. Bacon

1430-1500 PM Guardian – COL M. Malatesta

1500-1530 <u>BioWatch Programs</u> – Dr. J. Stiefel

1530-1535 Closing Comments – BG D. Ertwine,

USA (ret)

1535-1700 Demonstrations

1700-1830 Reception in Exhibit Pavilion







## Thursday, 26 June

0840-0845	Opening Comments – COL F. Cox,
	USA (ret)

0845-0915	<u>Keynote Address</u> –	Dr. G. P.	Nanos, Jr
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0915-0945	OSD – Mr. J	I. Reed
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0945-1015	Jt. Reg'ts Office -	- COL P. Sharon
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1015-1045 JSTO – Mr. F. Crowson

1045-1115 <u>Jt. T&E Executive</u> – Ms. J. Garber

1115-1330 Lunch in Exhibit Pavilion







## Thursday, 26 June (continued)

1330-1400	JPEO-CBD -	MG S. Reeves

1400-1430 20<sup>th</sup> SUPCOM CBRN – COL R. Van

Pelt

1430-1500 Joint CBRN Combat Developer –

BG T. Spoehr

1500-1505 Closing Comments – BG D. Ertwine,

USA (ret)

1505-1600 Demonstrations

1600 Conference & Exhibits Close





## **Summary**



- Surveys will be sent to attendees next Monday
- Attendees will receive a link to the 2008 proceedings within the next two weeks
- Please plan to attend the 2009 Jt CBRN Conference & Exhibition

# Chemical Biological Incident Response Force (CBIRF)

Maj Stan Bacon,
Operations Officer/Mission
Commander





# **History of CBIRF**



- 1995 Sarin Attack in Tokyo Subway
- CBIRF Established April 1996 per CMC planning guidance
- Why The Marine Corps
  - History of Non-Traditional Missions
  - America 911 Force
  - History of More with Less
  - Leadership: Mission Focused



### **Mission Statement**

"When directed, forward-deploy and/or respond to a credible threat of a chemical or biological incident in order to assist local, state, or federal agencies and designated Combatant Commanders in the conduct of consequence management operations."



## September 11, 2001 Targets & Weapons Changed







## **CBIRF Mission**



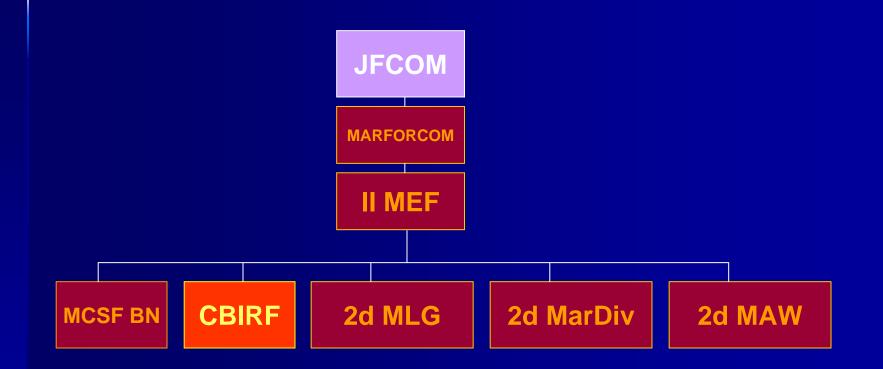
# Revised Mission Statement following 11 September 2001 Attacks

"When directed, forward-deploy and/or respond to a credible threat of a chemical, biological, radiological, nuclear, or high yield explosive (CBRNE) incident in order to assist local, state, or federal agencies and designated Combatant Commanders in the conduct of consequence management operations.



# **Chain of Command**







# CBIRF Concept of Operations



- Pre-Staged/Forward Deployed
  - Task organized for support of Combatant Commanders
  - Special Event Homeland Security (SEHS/NSSE)
- Short Notice Deployment
  - If situation dictates, CBIRF forces can be task organized as a "Special Purpose IRF" (SPIRF) based on the specific requirements from the requesting officials.
- No Notice (Standing Package 365 days a year)
  - 12 person Assessment Team w/in 1 hour
  - IRF-1a Standing Package ~ 130 Personnel
    - 2 hour alert
  - IRF-2 ~ 130 personnel
    - Stood up in 6 hour notice
    - Can be used for a second incident site or to form the nucleus of Follow on Forces (FOF)

CBIRF can respond by Sea, Air, or Land











## **Disciplines**



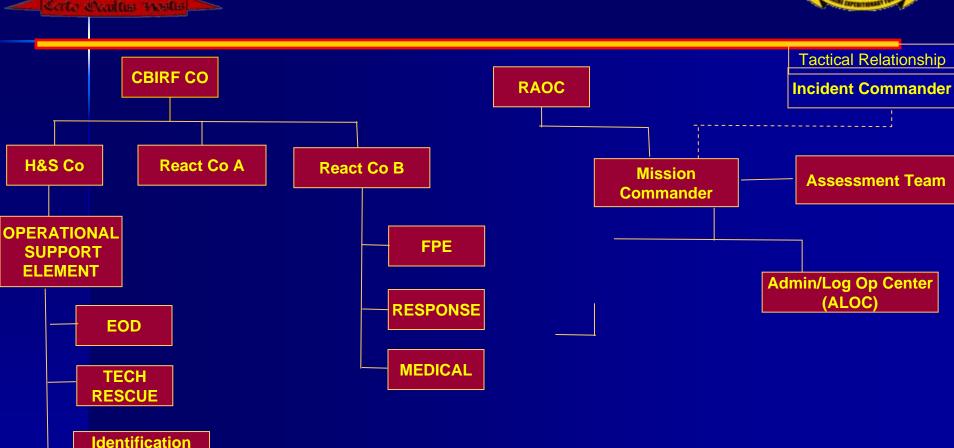
- Identification and Detection
- Search and Extraction
- Personnel Decontamination
- Technical Rescue
- Medical
- EOD
- **C4**
- Logistics



Plt

# Task Organization







## **Recon Capabilities**



- Detect and ID ~200,000 toxic industrial chemicals (TICS)
  - Low/high volatility
  - Quantification (IDLH)
- Detect and ID all known chemical warfare agents (CWA)
  - Quantification (IDLH)
- ID of 8 biological agents with HHA, ELISA, PCR bio detection capabilities
- More than 20 other bio agents can be identified when required
- Collect bio samples for lab analysis
- Detect and measure alpha, beta, gamma, neutron, and x-ray emissions



Level A



Level E

Levels A, B, and C capable



# **Extract Capabilities**



- Rapid Extraction Team Level A extraction
- Search and Extract Teams Level A, B, C
  - (19) 2-man Extract Teams
    - Non ambulatory (6-12 casualties per hour)
      - (Situational dependent)
    - Ambulatory (direct or lead out)



**LEVEL "A"** 



LEVEL "C"

**LEVEL "B"** 



# **Medical Capabilities**



- Medical care in the hot zone
- Trauma supplies for approximately 50 critical or 100 moderate to minor patients with a range of injuries
- Carries the equivalent of 1500 Mark I kits
- Airway management for ~28 respiratory distress cases

### Level B or C capable









# **Decon Capabilities**



- Force protection decon (30-45 per hour/IRF)
- Ambulatory decon (200-225 per hour/IRF)
- Non-ambulatory decon (65-75 per hour/IRF)

### Levels B and C capable







Force Protection Line

**Ambulatory Line** 

Non-Ambulatory

2-Jul-08

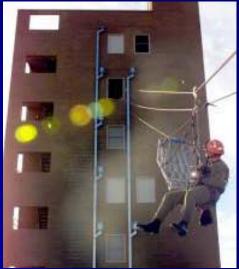


# Rescue Capabilities



- Certified in confined space rescue, trench rescue, vehicle and advanced rope rescue
- Collapsed structure stabilization and rescue
- Victim search and extraction

### Levels B and C capable



2-Jul-08





**Confined Space Rescue** 

Rope Rescue Trench Rescue



# **EOD Capabilities**



- Unmanned reconnaissance utilizing the ANDROS Robot
- Portable X-Ray with real time imagery
- IED render safe capabilities
- Detect/measure Alpha and Gamma; detect Beta radiation
- EOD Explosive suit capable

### Levels A, B, and C capable





**Blast Guard Tent** 



**EOD 9 Suit** 

2-Jul-08



# C2 Capabilities



- Secure HF/VHF/UHF/UHF
   SatCom radios
- Incident Commander's Radio Interface (ICRI) for interoperability of heterogeneous devices
- Unclassified data capability
- Classified and unclassified Global Broadcast Service (GBS) units





# Logistics Capabilities



- Organic transport assets
- Power generation
- Re-constitution of deployed forces
- Open purchase ability (Contracting Officer)
- Sustain the force on site









# CBIRF Pre-staged Special Event Homeland Security



#### SEHS / NSSE:

- Atlanta Olympics 1996
- Summit of the Eight Conference 1997
- Papal Visit 1999
- NATO 50th Anniversary Summit 1999
- Y2K New Years Celebration 2000
- World War II Memorial Dedication 2004
- G-8 Conference 2004
- President Reagan State Funeral 2004
- President Ford State Funeral 2006
- Presidential Inaugurations 97 / 01 / 05
- State of the Union 98 / 99 / 00 / 03 / 04 / 05 / 06 / 07 / 08
- RNC- 08

#### Other Exercises & Events:

- Capitol Shield
- Ardent Sentry
- Marine Corps Marathon
- DRDC (Canada)
- West Virginia Center for National Response
- Washington Metropolitan Area Transit Authority (WMATA)











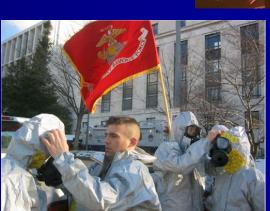
2-Jul-08 St. Louis



# **CBIRF Training**



- CBIRF Basic Operators Course (CBOC): 3 Weeks
- CBIRF Advanced Course (CAC): 1 Week
- DRDC Live Agent Training (Canada): 1.5 Weeks
- Inter-Agency Training
  - CST's, FD's, PD's, FBI etc...
- Cornerstones:
  - Confidence in Environment
  - Understand Prudent Risks
  - Build Discipline and Teamwork
  - Live with Hard Decisions
  - Knowledge of WMD Devices
  - USAR in PPE









# Working in the Inter-agency Culture



## Challenges:

- Culture/Priorities
- Laws, Standards, Regulations
- TTP's and Equipment

### Solutions:

- Incident Command System
- Personal Relationships/LNO's
- Consistent Engagement













# **CBIRF Partnerships**



- JTF-CS
- USAF AFFPBL
- DTRA
- NGB CST
- NMRC BDRD
- NIOSH CDC
- US Army Tech Escort
- USCG NSFCC
- US EPA ERT
- DOE
- FBI HMRU
- FEMA
- U.S. Capitol Police
- New York City Fire Dept
- San Francisco Fire Dept
- Baltimore City Fire Dept
- Wash D.C. Fire Dept
- New York Police Dept





# CBIRF Worldwide Partnerships



- Countries/Units CBIRF has partnered with to foster a CBRNE sharing network:
  - Panama
  - Chile
  - Georgia
  - Canada
  - Singapore
  - Australia
  - Czechoslovakia
  - Denmark
  - Marine Security Guard Battalion



# Contributions to the First Responder Community



CBIRF's Interaction with other First Responder organizations, whether from the strategic, operational, or tactical level has had a dramatic impact on the operational readiness of both Department of Defense (DOD) and Civilian First Responders.









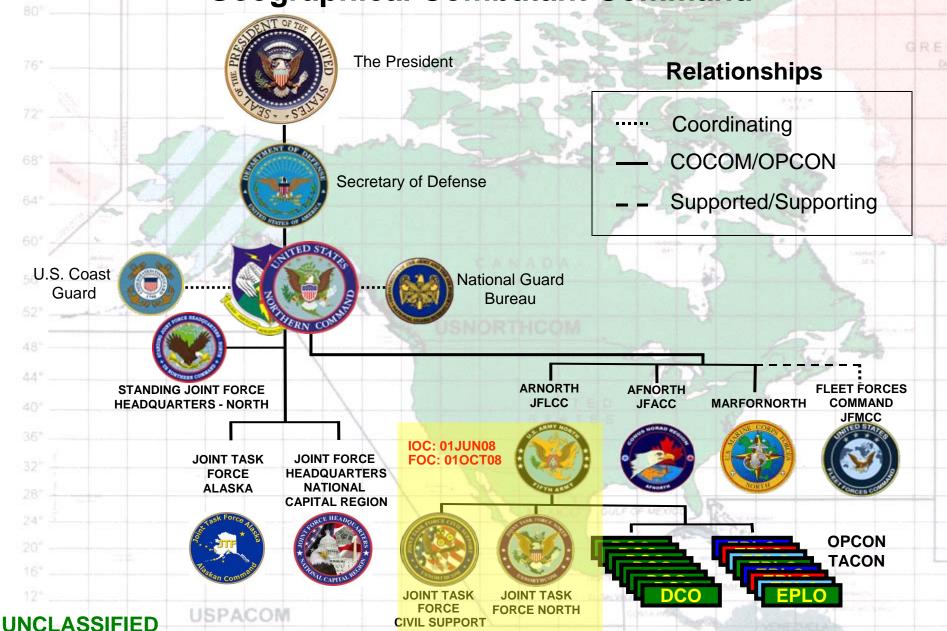


## What is JTF-CS?

- USNORTHCOM standing Joint Task Force HQ of Joint military, DOD civilian and contractor personnel at Fort Monroe, Virginia.
- Originally established under USJFCOM (pre-9/11) to address national level concerns for planning and integration of DOD CBRNE Consequence Management (CM) support to civil authorities.
- A deployable Command and Control headquarters for DOD units and personnel executing CM operations in response to one or more CBRNE incidents.



# USNORTHCOM Organization Chart Geographical Combatant Command





## **USNORTHCOM Mission Statement**

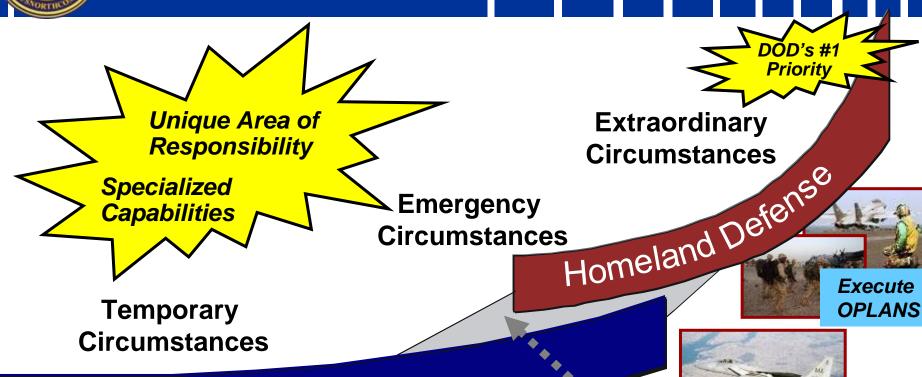
USNORTHCOM anticipates and conducts
Homeland Defense and Civil Support
operations within the assigned area of
responsibility to defend, protect, and secure
the United States and its interests







## **USNORTHCOM Spectrum of Missions**



## CivilSupport



Special Events



Patrol Spt



Border Transnational Disaster **Threats** 



Relief



Civil Disturbance



**CBRNE** Incident Mamt



Air Patrols

Maritime Security



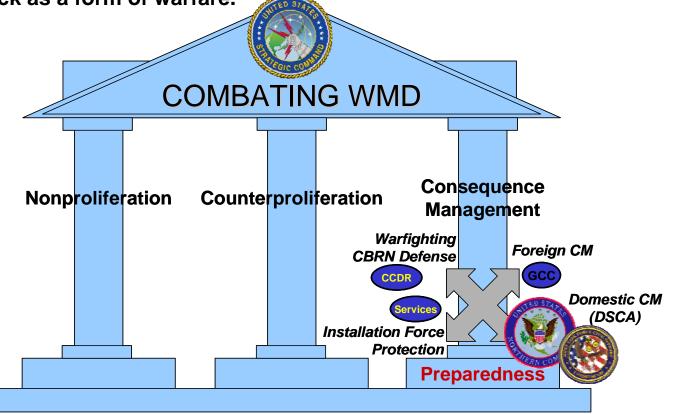
Missile **Defense** 

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### Three Pillars of National Strategy for C-WMD

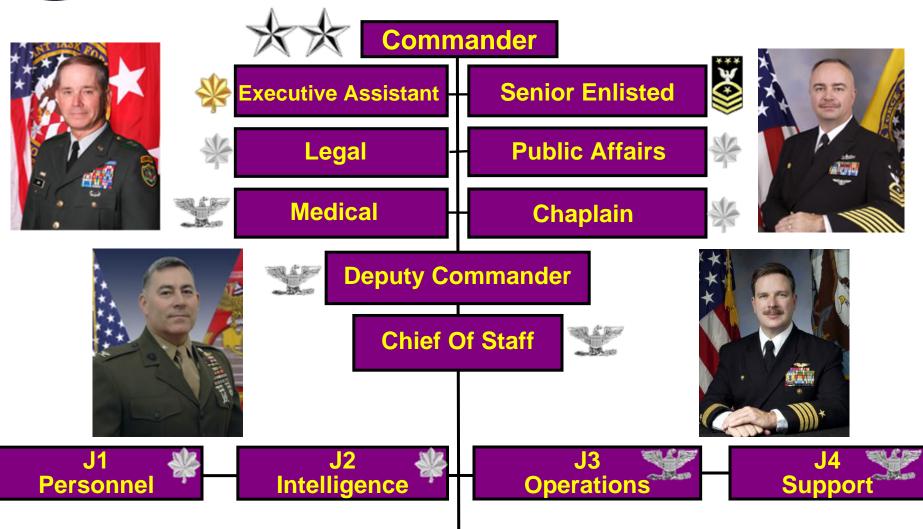
Effective CBRN CM capabilities are vital for USNORTHCOM to achieve its homeland defense goals. Ensuring that highly effective and responsive CBRNE consequence management forces are available is as much about defending against and deterring asymmetric threats to the United States as it is about responding to them. Reducing the vulnerability of the country to CBRNE attack may have the effect of reducing the appeal of CBRNE attack as a form of warfare.



6



### JTF-CS Structure



**J6** 

Communication

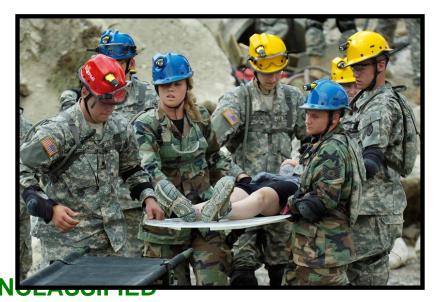
**J5** 

**Planning** 



### JTF-CS Mission

JTF-CS anticipates, plans and integrates USNORTHCOM Chemical, Biological, Radiological, Nuclear, and high-yield Explosive (CBRNE) Consequence Management operations and when directed, establishes command and control of DoD forces for a CBRNE incident to assist local authorities in saving lives, preventing injury, and providing temporary critical life support







## Area of Responsibility

# JTF-CS provides CBRNE planning, exercise, and response support within the U.S., its territories, and possessions

### **USPACOM**

Hawaii

Guam

American Samoa

Commonwealth of Northern Mariana Islands

Federated States of Micronesia, Marshall Islands, and Palau

#### <u>USNORTHCOM</u>

**CONUS** and Alaska



### **SOUTHCOM**

Puerto Rico

US Virgin Islands

- Big Country
- Lots of POC's
- Diverse/Varied



### A Different Mindset

### In CM the Effects are the Enemy

- Thermal
- Radiation
- Asphyxiation
- Chemical
- Biological
- Mechanical
- Psychological

Effects Cause Harm

How we Counteract Harm Dictates

Method of Response

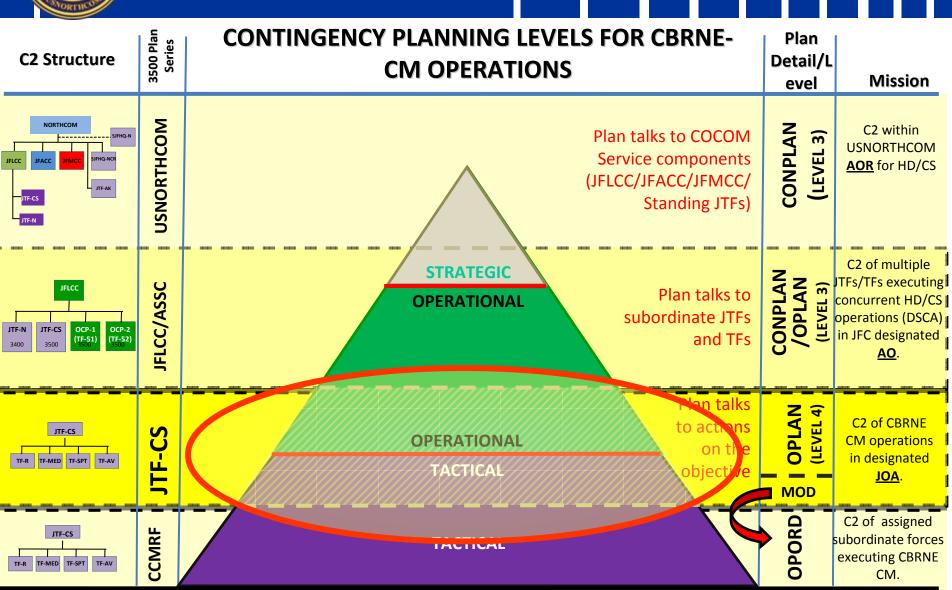
Response Drives Forces Required

✓ Ability to Anticipate RFAs Affects Speed of Response





### JTF-CS Focus





### ...A Matter of When







"In my opinion, the prospects of a future attack against the United States are almost certain. *It's* not a matter of if, but when."

Vice President Dick Cheney





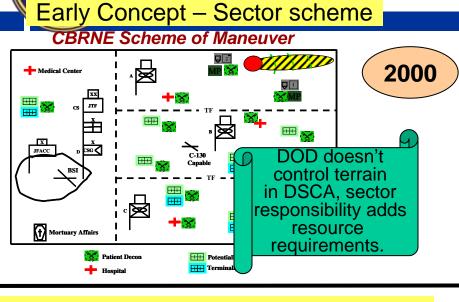


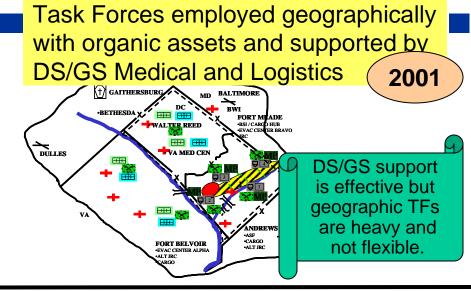
### DOD Evolution towards Domestic Response

Statutes, DOD/JCS Policy, & Direction	Pre- 1998  Defense Against Weapons of Mass Destruction Act of 1996 (Nunn- Lugar- Dominici)	Subj:  Military Support to Civil Authoriti s in WMI	ie D	2000	2001  CJCSI 3125.01  Military Assist to Domestic CM in Response to CBRNE 3aug01		2003	2004	2005 Strategy for Homeland Defense and Civil Support June 2005	QDR SPG	2007 CJCSI 3125.01A DSCA domestic CM in Response to CBRNE incident 16Mar07	
Events				TOPOFF One	9/11 attac 2001 Pres I - 1st Appro TPFDD w/t	K (ONI (ONI lnaug ON lved TPI	RATION e Eagle E) HD&CS D2 Olympics E drove FDD conf. urced IEF	&	Katr	ina		
Federal Response Documents	FRP 92				ed Terrorism FRP rev 03 ONPLAN			NRF	P National Scenarios NR NRP CIS TCLs/UTLs			NRF
DOD Documents		FORSCOM pub WMD response capabilities			JFCOM JTF-CS IEF TPFDD CONPLAN 0500 with JFCOM PIDS CONPLAN 0500				USNC CONPLAN 3500 CBRNE CBRNE EXORD #1 EXORD #2			CCMRF ASSIGNED TO NORTHCOM
	DOD's Approach to Changes in National Strategy for Domestic Response											
	Receive ID ta funded RFA capa then ID advan capabilities "Force			Proac ID task capabili advance "Force to mate	ks and Identify illities in source of RFA capable to Task IEF T		potential ces of bilities PFDD	5	CCMRF PTDO T timelines and u JMETS co		Train, unity consis (mult	exercise, of effort – tent forces iple event pability)

### Evolution IEF to CCMRF **Operational Force Employment**

#### **UNCLASSIFIED**





Task Forces with organic assets and employing Functional Air and Maritime

#### TF Alpha HHD MANEUVER BDE HHC ENG BN ENG CO (CSE) CHEM CO (RECON)(-) CHEM CO (DECON)(-) TRANS CO MP CO EMEDS (DS) SMART-NBC MSE CO (-)

**JFACC** HHC AVN BN MED HEL CO (UH-47) AASLT HEL CO (UH 60) AVIM CO DIRMOBFOR

#### MEDICAL AUGMENTEES MP BN (-) QM BN (DS) MSE CO (-) **JFMCC** COMPHIBRON LHD/LHA SP MAGTF MSSG/LOGISTICS BN COMPOSITE AVN SQRN UNCLASSIFIED

2002 TF Bravo TF Charlie HHD MANEUVER BDE HHD MANEUVER MED BN (-) (DS) MED BN (-) (DS) SMART-NBC X3 MEDICAL AUGMENTEES SMART-TCC X3 SMART-SM X3 SMART-BURN X3 QM CO **EMEDS** MSE CO (-) MP CO JTF-CS MED BDE (GS) MED BN (AS)

Heaviest, unwieldy C2, hard to prioritize effort. MP CO (-)

MSE CO (-)

Current – Functional Task Forces 2004 ... **JTF** • Tech Aug Mapping Modeling Public Affairs **TF Response TF Medical TF Support** TF Aviation **Medical Support Logistics Support** Aviation Support Incident Site Support Simplest, lightest Triage /Treatment Gene Extraction of Injured JRSO Hospital Augmentation Decontamination and most efficient. Displa Surveying, Monitoring, Agent Technical Support and Marking of Incident Site Mortua Veterinary Support Best unity Security and Protection Prophylaxis/Immunization Transi NDMS support Engine of effort.



### NRP/NRF Mission Analysis

### **Identifying** the DOD Tasks

The NRP/NRF identifies primary agency and support agency responsibilities, actions, and/or functions for each ESF.

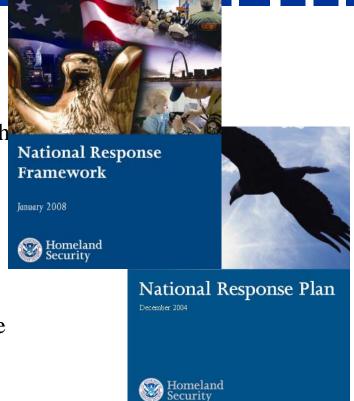
• **Specified Tasks**: Stated as Supporting Agency Functions for DoD in the NRP.

### **74** Specified Tasks

• Implied Tasks: Not specifically assigned but must be accomplished to perform the CBRNE CM mission.

### **82** Implied Tasks

- Mission analysis identified capabilities required to accomplish specified tasks.
- Force Providers identify forces which have those capabilities.
  - Specified tasks may become mission assignments and will require forces.
  - Implied Tasks must be accomplished to perform the mission and may require forces.





"The scenarios... are so hard for us to contemplate and so emotionally traumatic that it is tempting to push them aside. However now is the time to have this difficult conversation."

Sen Joseph Lieberman(I-Conn)

"...find the right way to put together capabilities of the federal government in support of the capabilities of the state..."

General Victor E. Renuart Jr. Commander NORAD & USNORTHCOM







## Operational CBRNE CM Capabilities

Anticipated Tasks and Requirements

JTF-CS

#### **HQ Support**

- Communications
- Tech Augmentation
  - Intelligence
  - Mapping
  - Modeling
  - Weather
- Public Affairs

#### **TF Operations**

**Incident Site Support** 

- Coordinate with Local Incident Command System
- Extraction of Injured
- Personnel and Equipment Decon
- Surveying, Marking and Monitoring of Incident Site
- Security & Protection
- Augment Critical Civilian Skills

#### **TF Medical**

**Medical Support** 

- Triage /Treatment
- Definitive Care
- Medical Logistics
- Hospital Augment
- Epidemiological
- Technical Support
- Stress Management
- Preventative Med
- Veterinary Support
- Prophylaxis/ Immunization

#### **TF Support**

**Logistics Support** 

- General Support Logistics
- Joint Reception,
   Staging, Onward
   Movement and
   Integration
- Displaced Populace
- Mortuary Affairs
- Transportation
- Maintenance
- Engineering

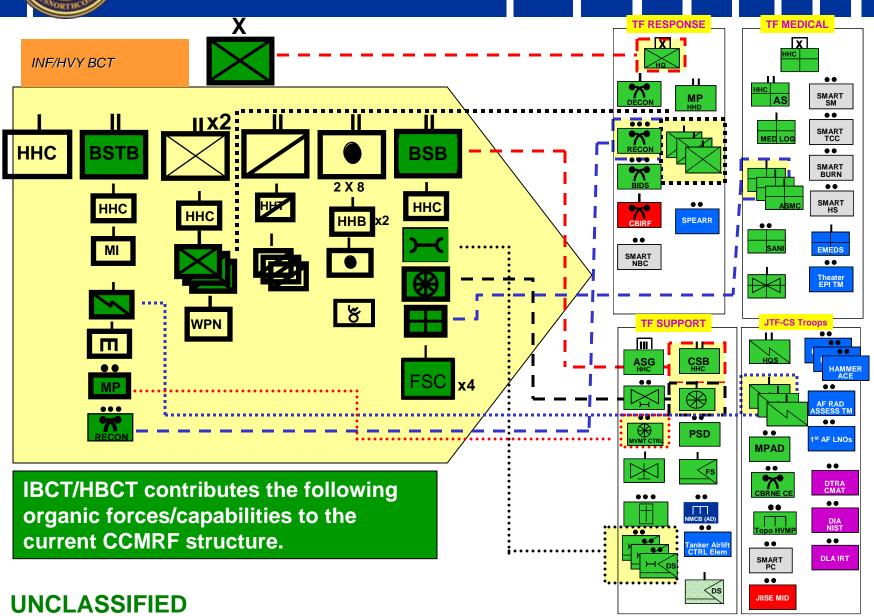
#### **TF Aviation**

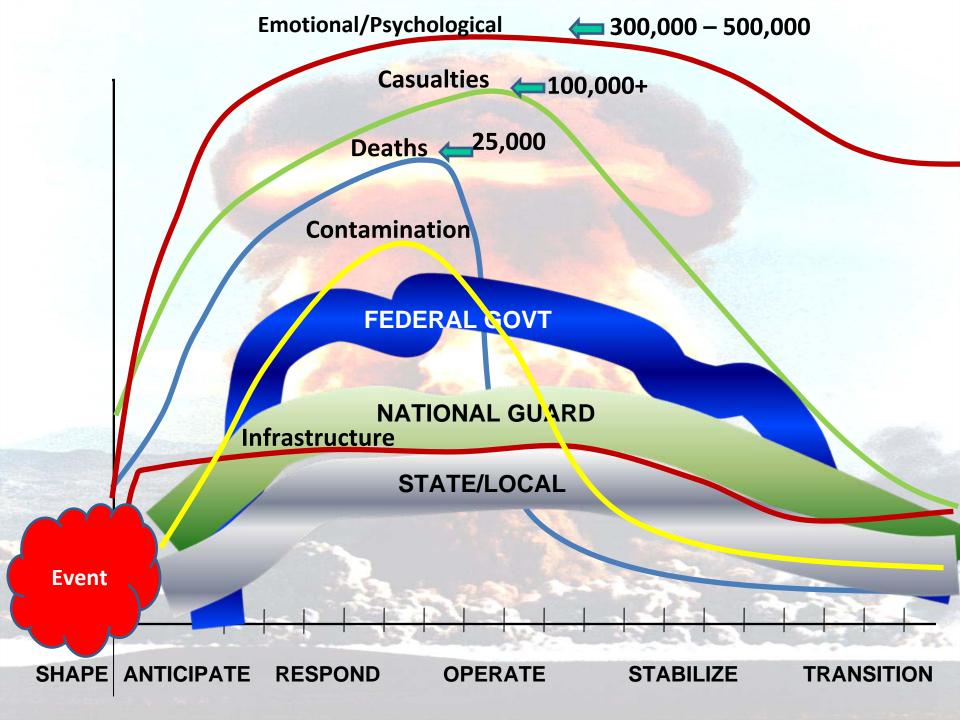
**Aviation Support** 

- Helicopter Lift
- Search and Rescue
- Casualty Evac
- Patient Redistribution
- Aerial Survey
- AviationMaintenance
- Unmanned Aerial Systems
- Assist Air Control



### Force Capability Linkage







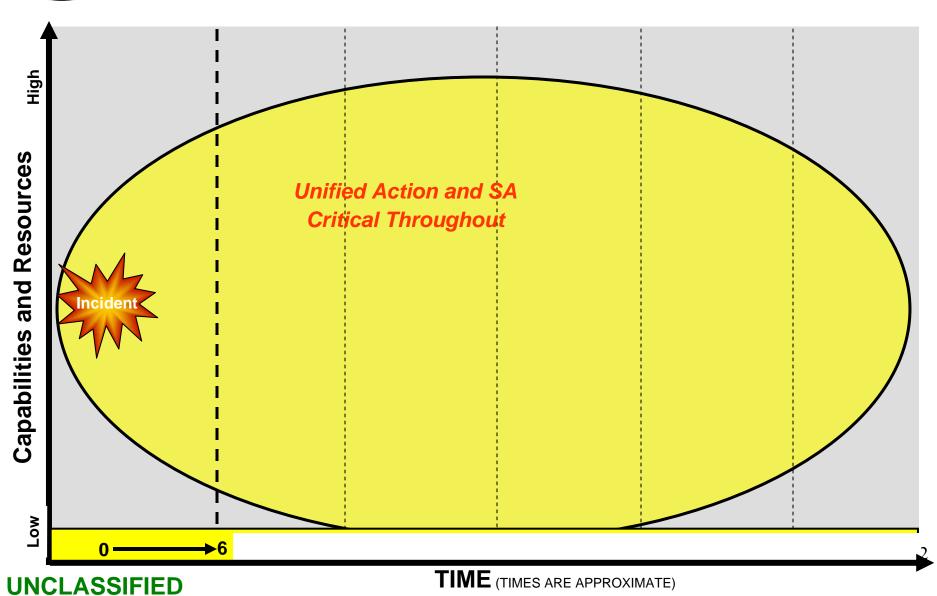
"It is bringing capability and capacity at the right time at the right place, not overwhelming the receiving state, but bringing in something that is sorely needed...the governor is the commander in his or her state." "...not too soon, but not a second too long..."



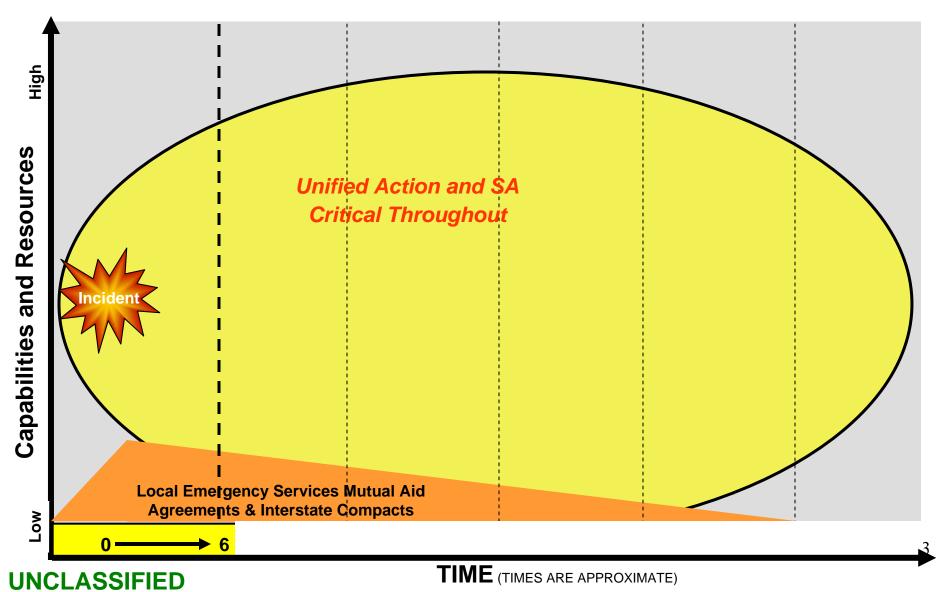
General Victor E. Renuart Jr. Commander NORAD & USNORTHCOM



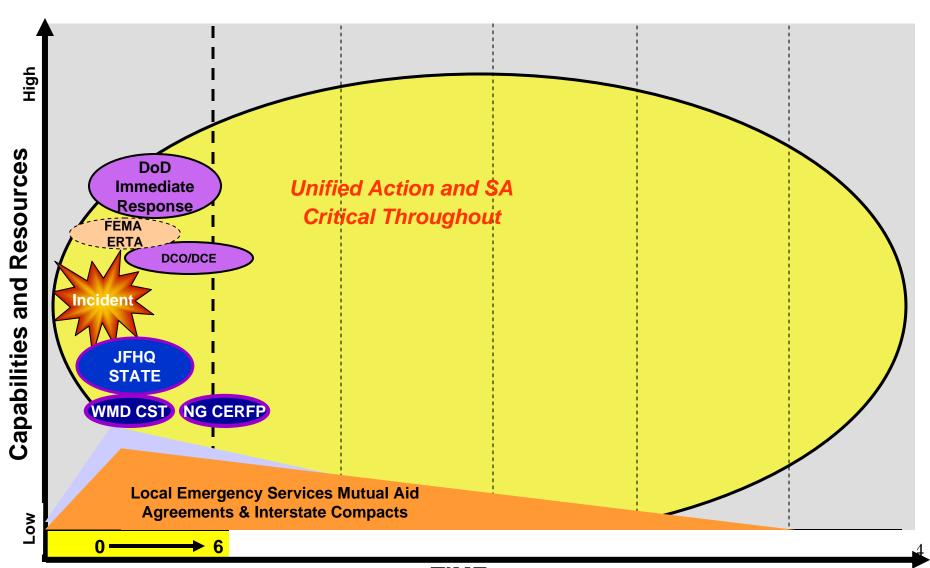






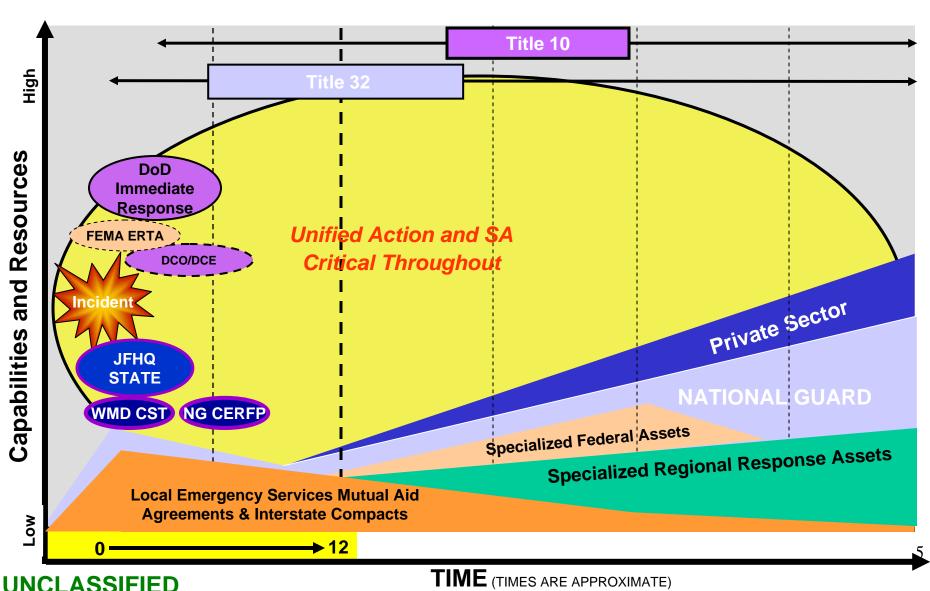




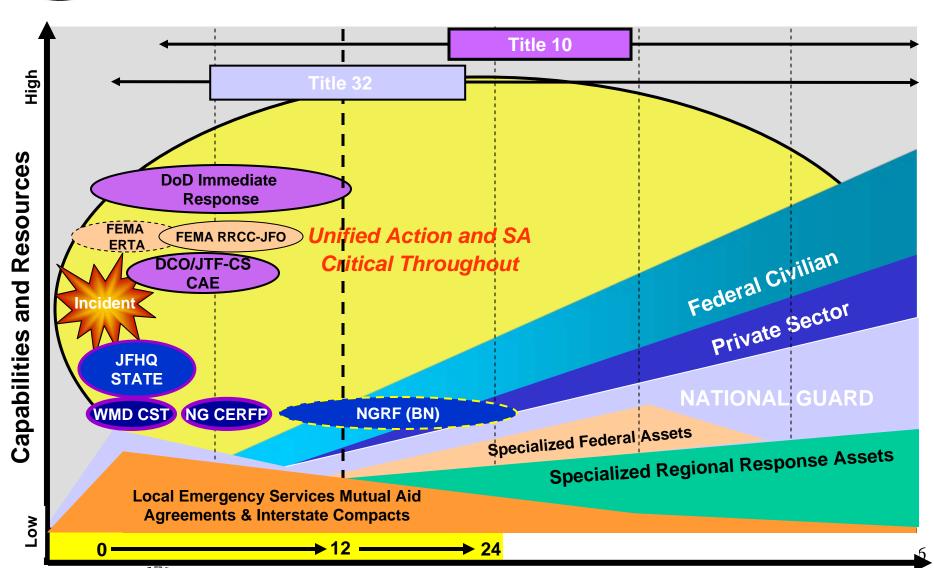




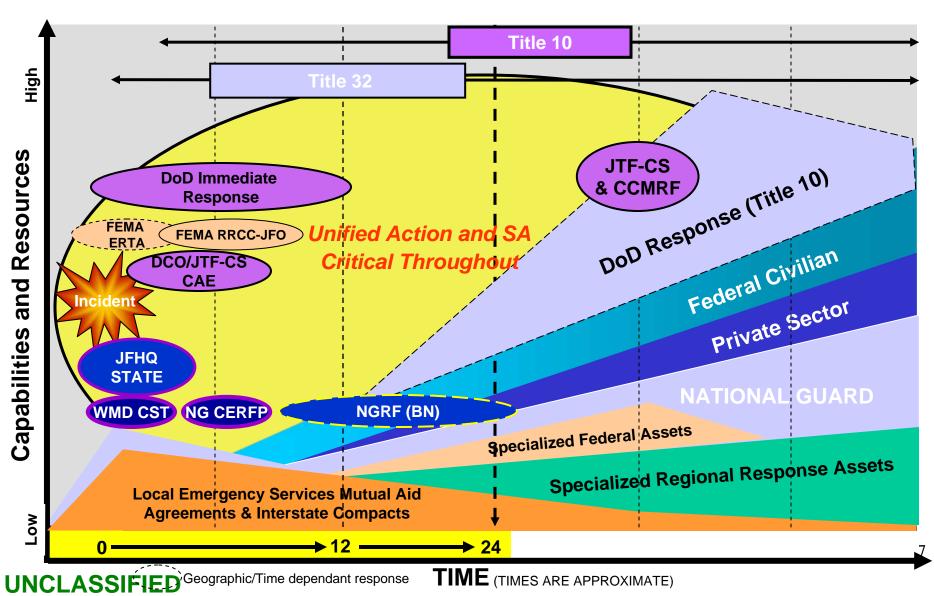
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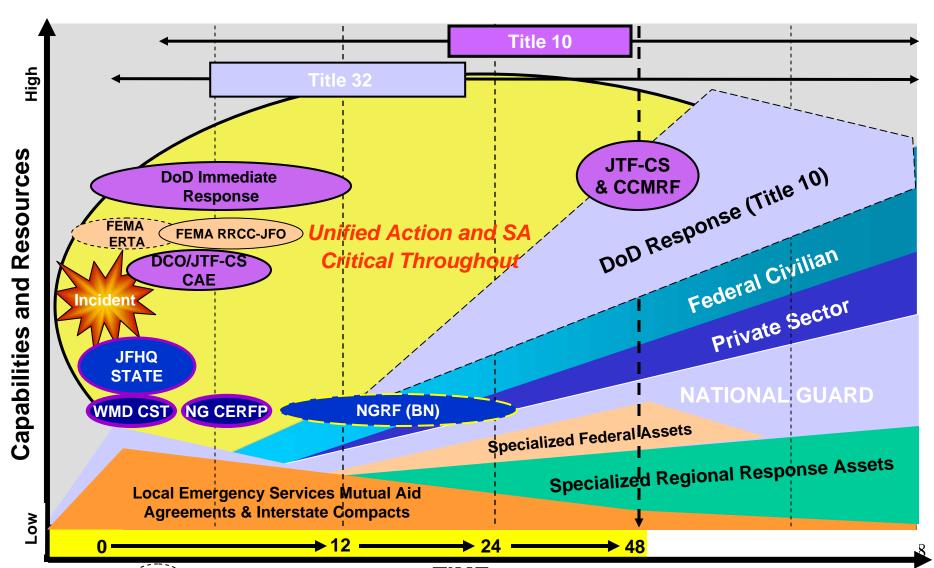




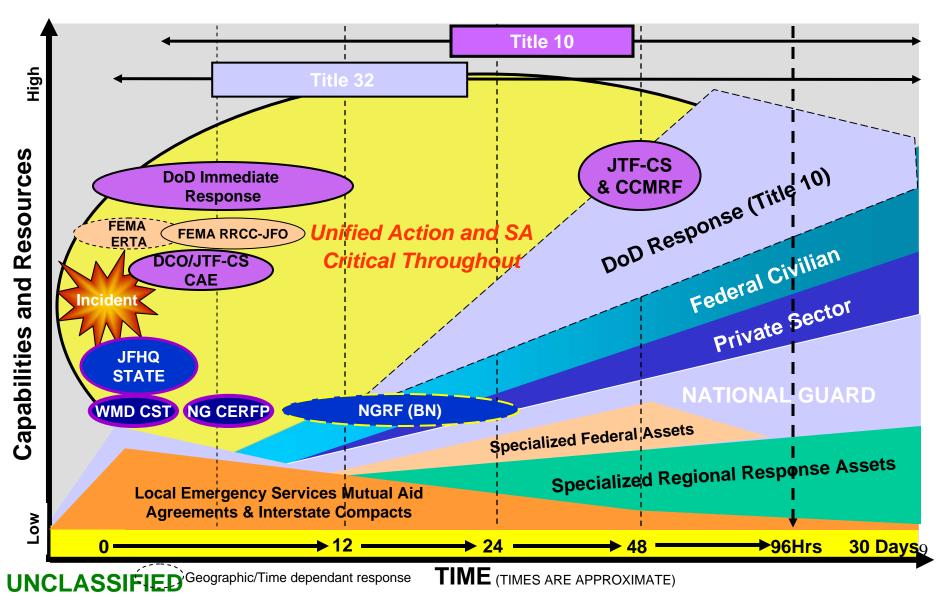








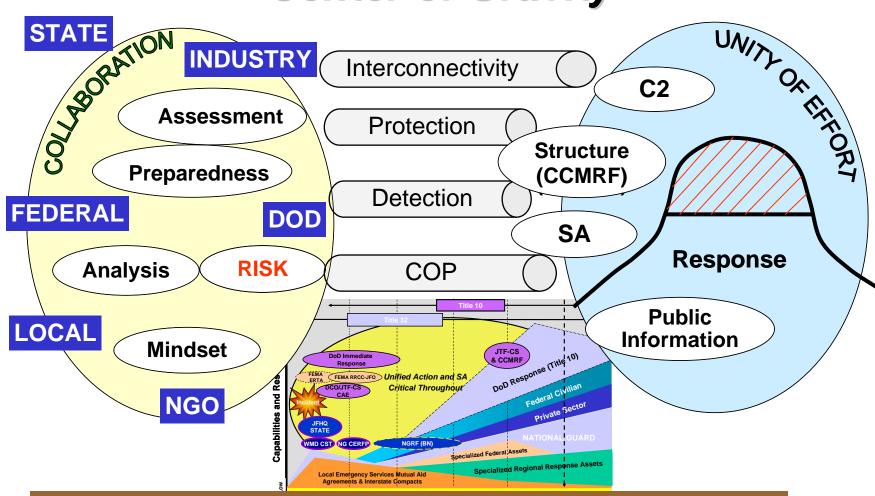






## Speed of Response vs. Unified Action

"Center of Gravity"



LAW / POLICY / REGULATION / PROCESS

30

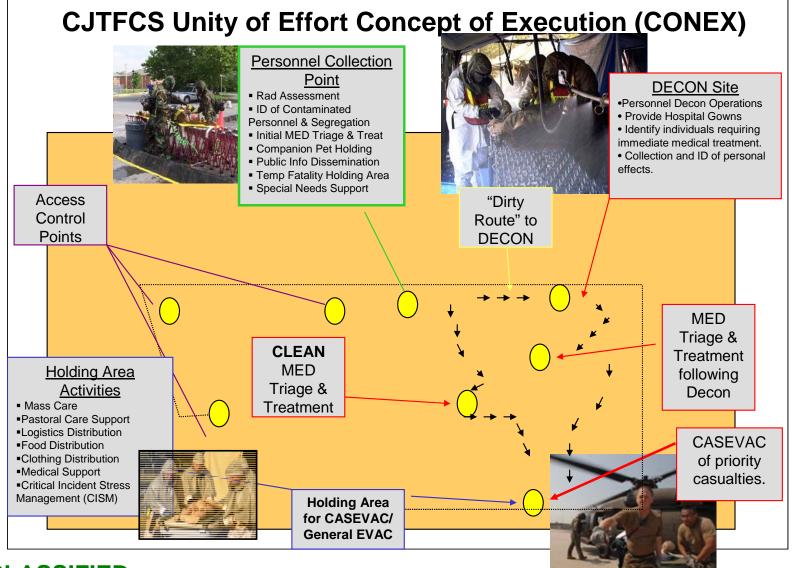
Community

Recovery



- The operational COG for CBRNE CM is the ability to timely and decisively, synchronize, coordinate and integrate the response actions of ALL assigned Title 10 forces and capabilities with local, state, federal and NGOs execution response operations under a unified concept of operations and execution that:
  - Maximizes available resources;
  - Communicates clear objectives and priorities;
  - Eliminate duplication of effort; and
  - Sustains continuous operations.







"...look for ways to continue to partner to make the job of the states easier when it comes time to respond within their state..."

General Victor F. Renuart Jr.

General Victor E. Renuart Jr. Commander NORAD & USNORTHCOM





## Take Aways

- Swap Business Cards before the "event"
- Relationships
- JTF-CS is focused and dedicated to anticipating, planning, integrating, and responding to CBRNE events
- Achieving Unified Action through proactive resolution of issues and identification of trends is vital to ensuring speed of response and overall required capabilities
- "Not if...but when"





### **Questions?**









- How NORAD and USNORTHCOM Fit Together
- Missions
- Areas of Operations/Responsibility
- Operations
- Interagency Collaboration
- Training & Exercises



### How We Fit Together





### NORAD & USNORTHCOM Missions

### NORAD Missions:

- Aerospace Warning
- Aerospace Control
- Maritime Warning

### USNORTHCOM Missions:

- Homeland Defense
- Civil Support



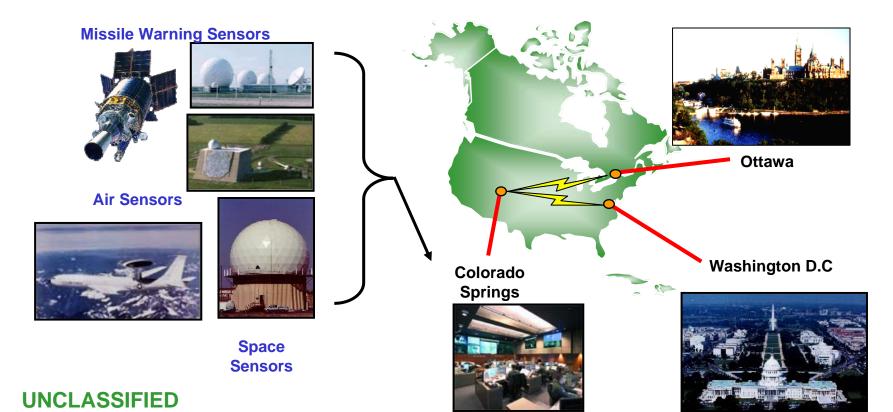
# Aerospace Warning

#### **NORAD Agreement:**

- Process, Assess and Disseminate intelligence and information related to manmade objects in the aerospace domain

#### **Terms of Reference:**

- Includes support of designated commands responsible for missile defense
- Monitor global aerospace activities & related developments





# Aerospace Control

NORAD Agreement: Provide surveillance and control of the airspace of Canada & the U.S.

#### **Terms of Reference:**

- Capabilities to detect, identify, monitor and take actions (visual ID to destruction) against manned and unmanned airborne objects

### **Surveillance** (know what is going on)

**Detect/Track** 







**Scramble** 

**Control** (take appropriate action)











### - Airspace of and approaches to North America - Safeguard sovereign airspace of both countries

MacChord 🔊

Çanadlan Red

tinental 🐚 Region HQ



# Maritime Warning

NORAD Agreement: Processing, assessing, and disseminating intel/info related to maritime areas and international waterways & the maritime approaches to the U.S. & Canada

#### **Terms of Reference:**

- process & disseminate intel/info as part of an information sharing network
- enables the validation, characterization, and assessment of an attack by traditional or asymmetric maritime threats













### USNORTHCOM Mission

USNORTHCOM anticipates and conducts Homeland Defense and Civil Support operations within the assigned area of responsibility to defend, protect, and secure the United States and its interest



USNORTHCOM defends America's homeland—protecting our people, national power, and freedom of action

**Priorit** 



### Our Role in Protecting the Homeland



**Emergency Circumstances** 

**Extraordinary Circumstances** 

Homeland Defense







Special Events Counter Narcotics



Domestic
Disaster Relief



Domestic Civil Support



CBRNE Incident Mgmt



### Ground-Based Midcourse Defense

Boost Defense Segment

**Midcourse Defense Segment** 

Terminal Defense
Segment







Forward-Based Radar (FBX-T)



**AEGIS** 



AN/TPY-2 Radar



Early Warning Radar (Cobra Dane)



Based Interceptors

**Ground-**

Command, Control, Battle Management & Communications

**USSTRATCOM** 

USPACOM

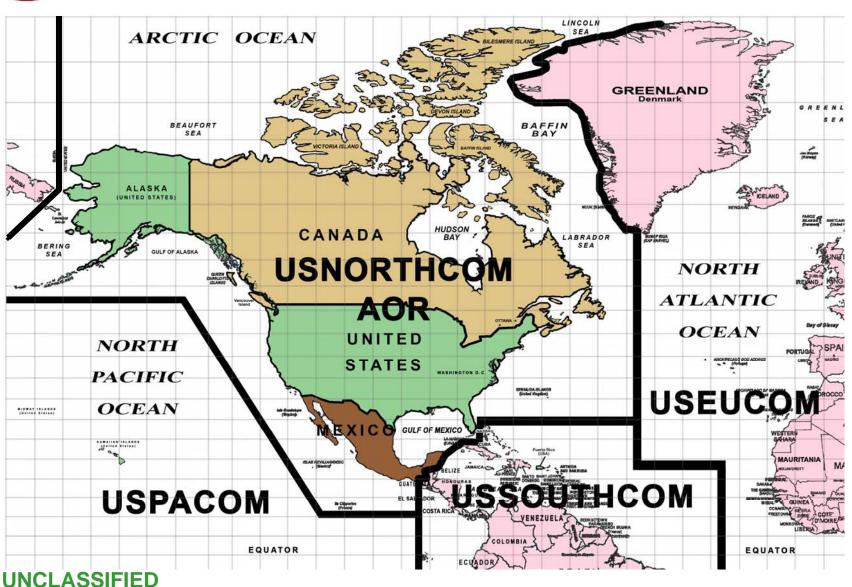
**USNORTHCOM** 

**NORAD** 

**NMCC** 



## Area of Responsibility





## Scope of the CONUS Effort

• Over 85 percent of all Department of Defense assets are in the U.S. Northern Command area of responsibility

Personnel: All DoD personnel to include DoD Contractors, Family members and Reserve Components

#### **Installations/Facilities:**

**DoD Installations – 2,887\*** 

- Army 1,343
- Air Force 857
- Navy 599
- USMC 88



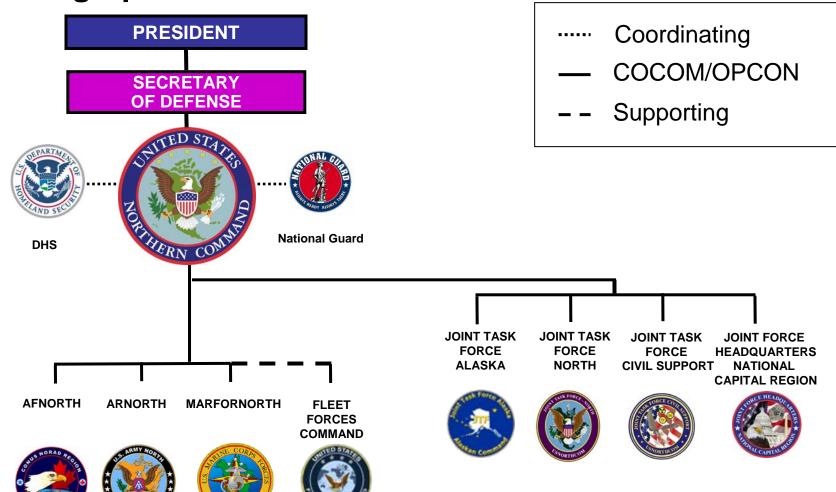
\* Installation/facility totals derived from DoD Base Structure Report, FY06 Baseline; Does not include military off-installation activities or those of the DoD Agencies and Field Activities across the NC AOR



### USNORTHCOM C2

### **U.S. Geographic Combatant Command**

### Relationships





**UNCLASSIFIED** 

## The National Response Framework (Plan)





### Total Force/Interagency Team



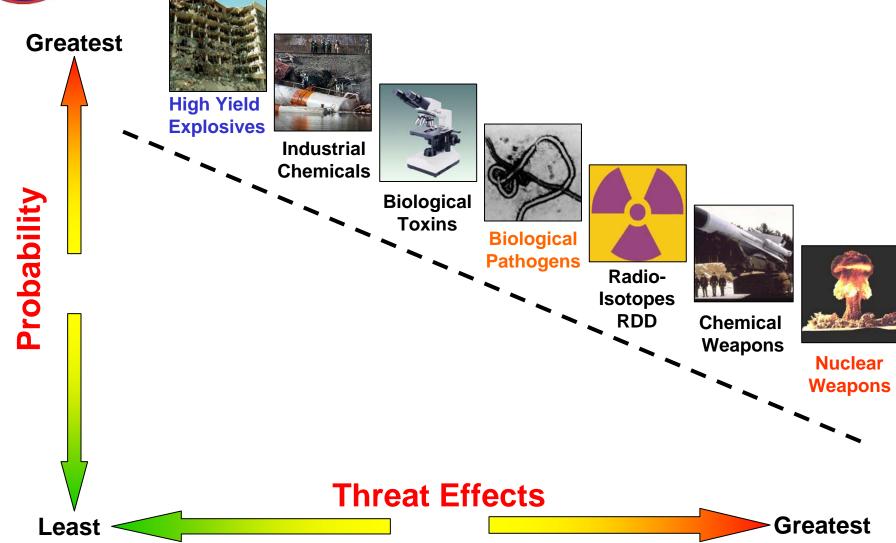


Over 60 Organizations are part of our Team

Redefining Jointness...Success Through Effective Relationships



### CBRNE Threat / Probability Continuum





## Smart Threads Integrated Radiological Sensors (STIRS)

- NC as JCTD Operational Manager -- \$45M, 4-yr Joint Capabilities Technology Demonstration (JCTD)
  - Radiation detection systems capable of transmitting radiation detection and identification information via tactical and operational C4 systems
  - Increases tactical unit commander detection and identification of radiological/nuclear material
  - Three project "spirals": Backpack, Vehicle / Maritime panels, and Pod on FIRESCOUT UAV





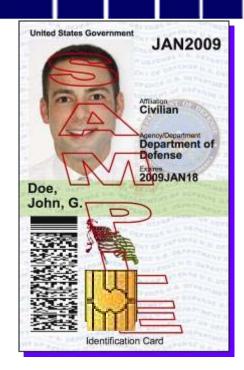




### Progress to Date



Overall – we are still utilizing "flash pass" access control; non-compliant with DOD regulation; not applying electronic authentication or biometrics







## Terrorist Attack Synopsis - Aug 1985

- Rhein-Main Air Base, Germany
- Synopsis:
  - On 8 August 1985, The Red Army Faction also commonly known as the Baader-Meinhof Group (or Gang) exploded a bomb in a Volkswagen Minibus on Rhein-Main Air Base in the parking lot across from the base commander's office. Two people were killed in the attack; Airman First Class Frank Scarton and Becky Bristol, a U.S. civilian employee who also was the spouse of a U.S. Air Force enlisted man. Additionally, the blast wounded twenty other personnel.





- Army Specialist Edward Pimental was kidnapped and killed the night before for his military ID card which was used to gain access to the base. The French terrorist organization Action Directe is suspected to have collaborated with the RAF on this attack.
- Two RAF members, Birgit Hogefeld and Eva Haule have been tried and convicted for their involvement in this event. Hogefeld lured Specialist Pimental to her home after meeting him in a bar, where he was then shot through the neck and killed. Eva Haule was also convicted for involvement with Pimental's murder.



## Islamic Jihad Union and Fort Dix, 2007

- •<u>Threat</u>: Islamic Jihad Union (IJU), 3 arrested and 7 suspects at large; extended planning to carry out attacks against German and American targets including Ramstein Air Base
  - ✓ <u>Mitigation</u>: Defense Biometric Identification System (DBIDS) enterprise is in place at EUCOM bases; includes 100 percent electronic credentialing for installation access
- Threat: Fort Dix "six" used a group member's family pizza shop as a cover to gain access and conduct surveillance on Fort Dix via pizza deliveries,

acquired maps of military facilities

➤ <u>Mitigation</u>: Control access to bases; electronic & biometric credentialing; background checks for all vendors and contractors in accordance with DoD regulation; networked CONUS enterprise for 24/7 situational awareness across all Services.





### Biometrics to protect the Homeland



An ID Card can be scanned and authenticated in less time than to properly check the card without the scanner.

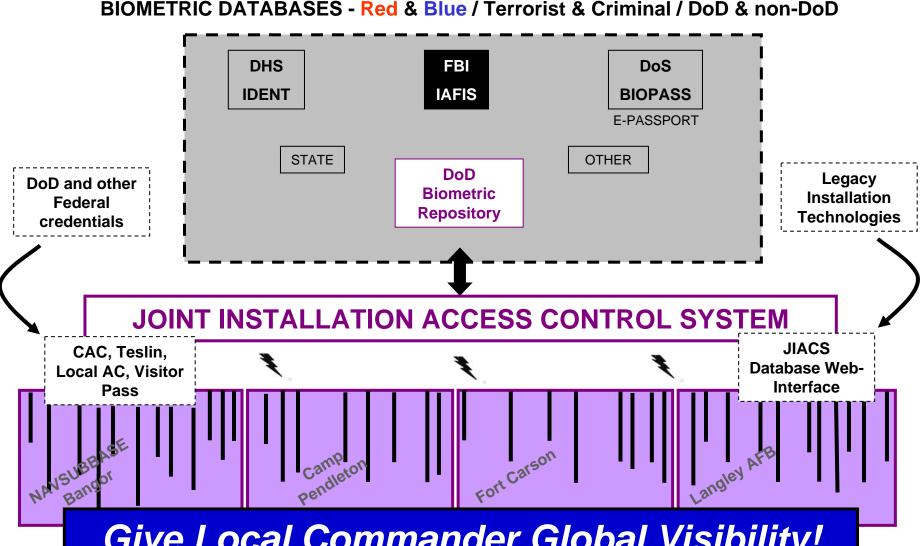
DBIDS is currently in place in Korea and Europe.





### Proposed Architecture

#### BIOMETRIC DATABASES - Red & Blue / Terrorist & Criminal / DoD & non-DoD



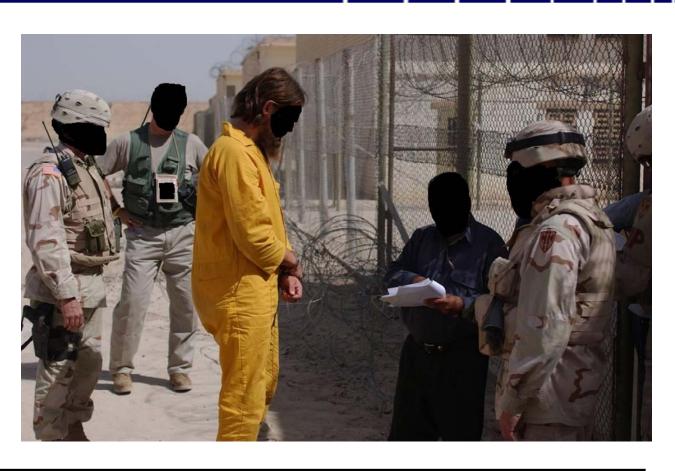
Give Local Commander Global Visibility!



### Summary

- Challenge
- Threat
- Progress
- Scope
- Concept
- End-State





## Biometrics & Identity Management

→ the Achilles Heel of terrorists and criminals





# **Concept Briefing**

**USAR CBRNE Incident Response Force (CIRF)** 

**14 JANUARY 2008** 

## Requirement

- Provide a CBIRF type capability similar to the Joint Task Force – Civil Support (JTF-CS) existing Marine Corps unit.
- Provide an initial response team and the follow-on CIRF.
- Describe the capabilities, staffing and equipment associated with each element.

## Marine Corps CBIRF Mission & Tasks

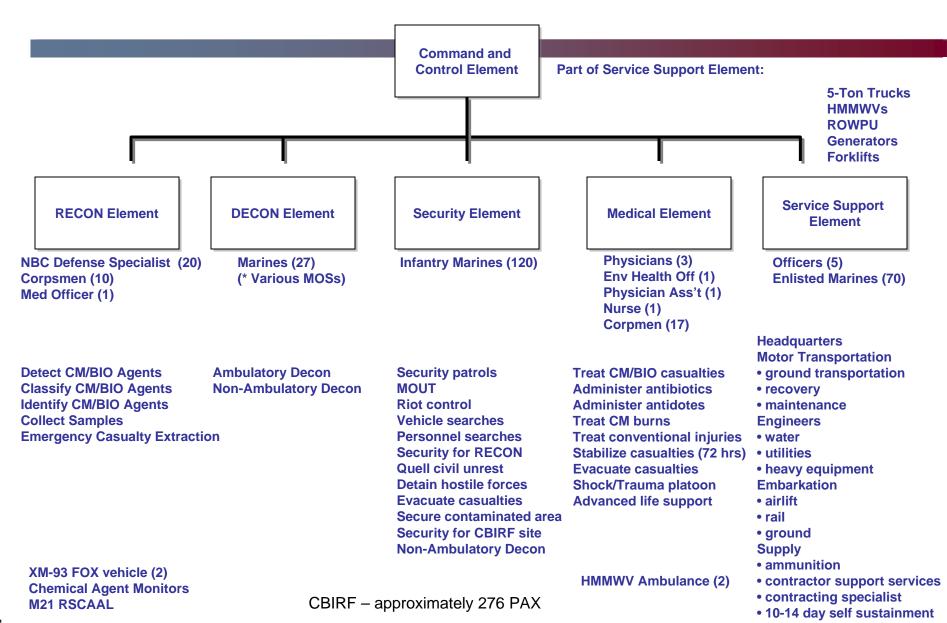
#### **CBRIF Mission**

When directed, forward-deploy and/or respond to a credible threat of a chemical, biological, radiological, nuclear, or high yield explosive (CBRNE) incident in order to assist local, state, or federal agencies and designated Combatant Commanders in the conduct of consequence management operations.

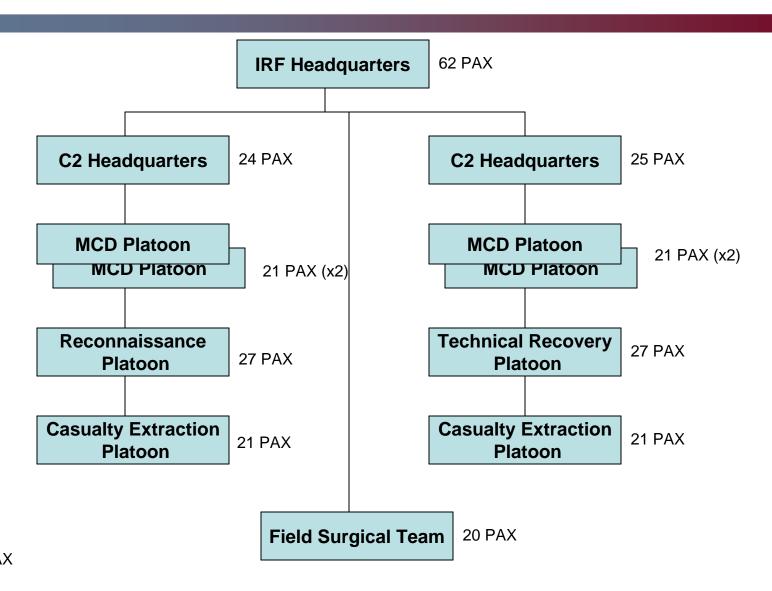
### **CBIRF Tasks**

- Conduct Agent Detection and Identification Operations
- Conduct Casualty Search and Extraction Operations
- Conduct Personnel Decontamination Operations
- Provide Emergency Medical Care and Stabilization
- Provide Force Protection in CBRNE Environment
- Task Organize in Support of National Events
- Coordinate with Local, State & Federal Agencies
- Develop Concepts, Organization, TTP's, and Equipment

# **US MARINES CBIRF Organization**



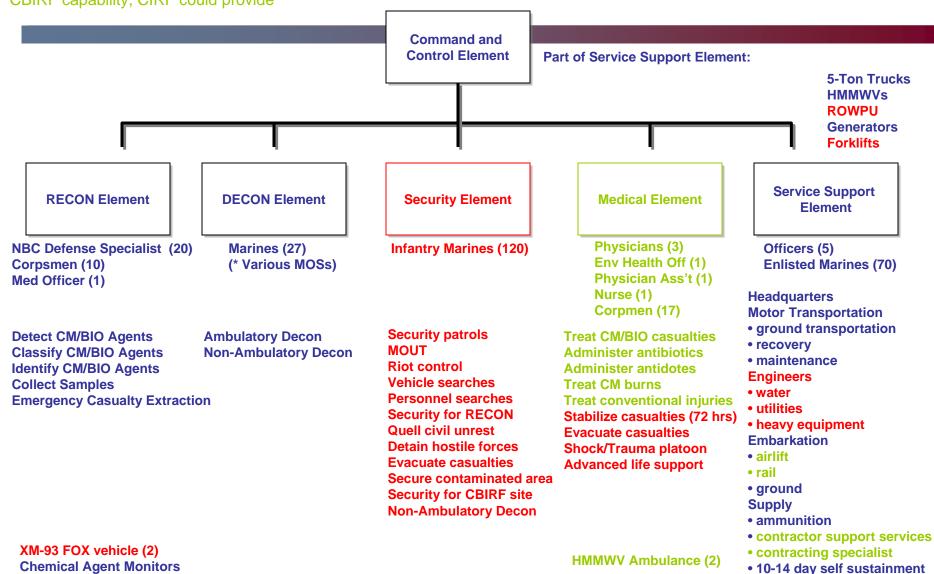
# **CIRF Task Organization**



CIRF – 311 PAX

Both CBIRF and CIRF capability
CBIRF only capability
CBIRF capability, CIRF could provide

# **CBIRF – CIRF Comparison**



**M21 RSCAAL** 

# Key Take Aways

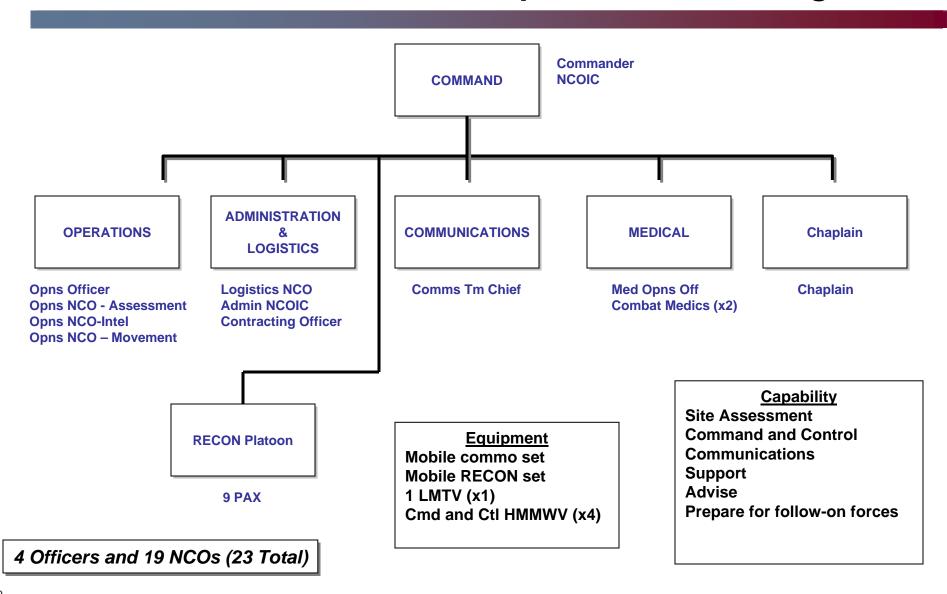
- CIRF cannot perform Security missions
- CBIRF Casualty Extraction and DECON platoons are not MOS specific
- Field Surgical Team is capable of performing some of the same tasks as CBIRF medical section
- CBIRF is self-sustaining for 10 days
- CIRF has limited Service Support Capability compared to CBIRF
- CIRF provides 4x the DECON capability as CBIRF
- CIRF provides 2x the casualty extraction capability as CBIRF
- CIRF provides additional Technical Recovery capability

7

# Fly-Away Comparisons

USMC CBIRF	12 PAX	Assessment Team
20 <sup>th</sup> Support Command CBRNE	15 PAX	Commo. C2 and reach-back capability
NG CST	22 PAX	Commo, C2, support, advise, site assessment.
CIRF (light)	23 PAX	site assessment team, C2, commo, C2 and reach-back capability
CIRF (heavy)	64 PAX	C2, commo, RECON, MCD and casualty extraction

# **CBRNE Initial Response Team (Light)**



# CIRT (L) Capability

- Provide Command and Control
- Establish communications
- Support civil authorities at incident scene
- Assess current and projected consequences
- Advise on response measures
- Chemical, biological and/or radiological assessment of incident scene (identify, classify and sample)

# CIRT (L) Communications Package



PSC-5 (1)
for secure radio to
NORTHCOM and JTF via
military satellite



INMARSAT M4 (1)
for voice or data via commercial
satellite or ISDN line



for mobile, secure calls via satellite



Mobile VTC (1) for voice, data, or VTC via commercial satellite



STE (2)
for secure voice or
data via landline



Mobile Phones from unit CTA (2)



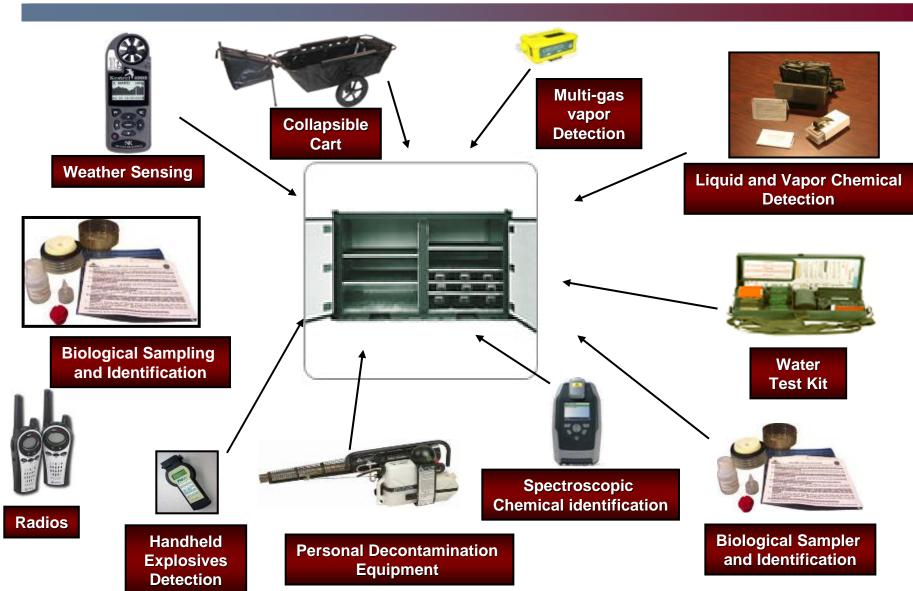
Secure (2+) and Nonsecure Laptops from unit CTA



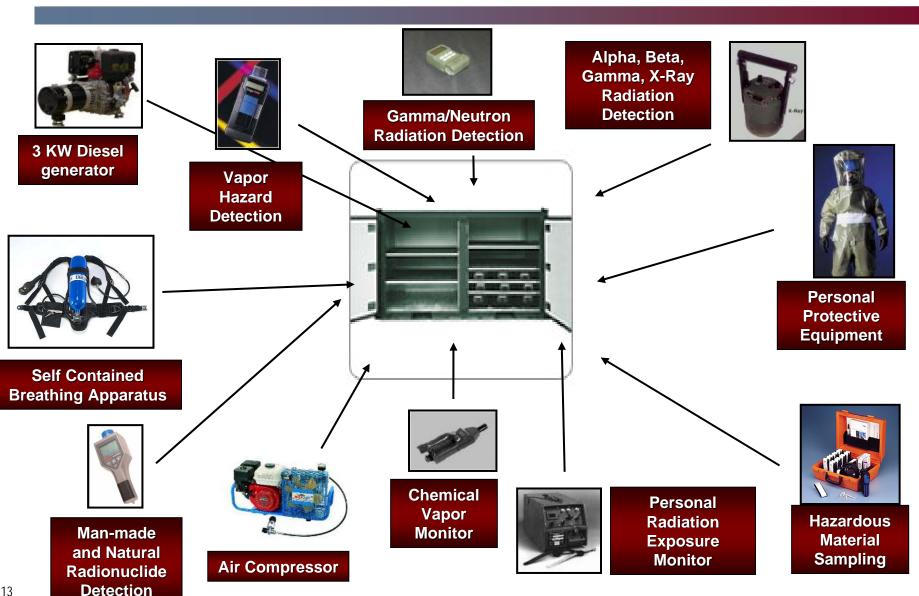
Secure Phone Sectera (4)



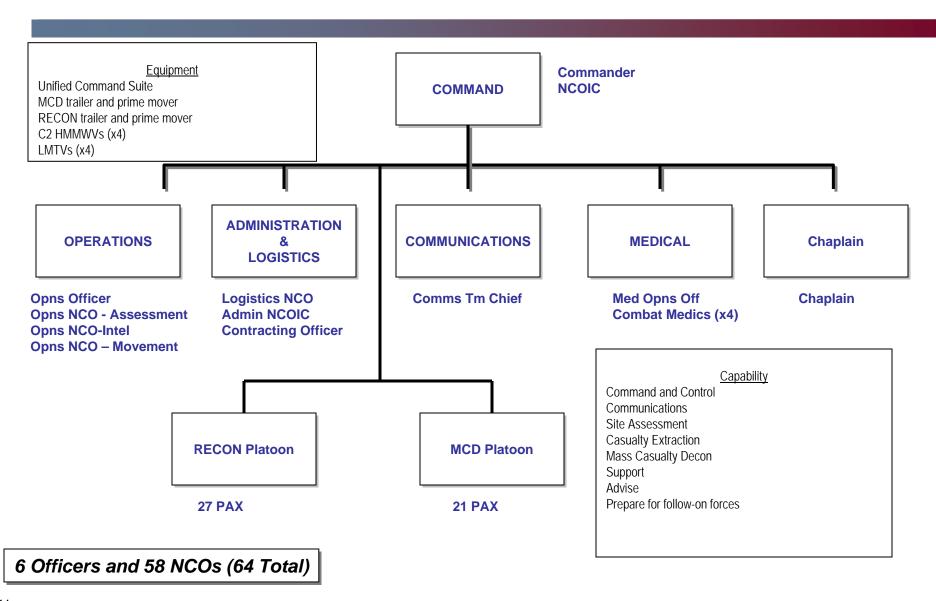
# CIRT (L) RECON Equipment



# CIRT (L) RECON Equipment



# CBRNE Initial Response Team (Heavy)



# CIRT (H) Capability

Same as Initial CBRNE Response Team (Light)

- Plus:
  - Remainder of RECON platoon
  - MCD platoon

# CIRT (H) Communications Equipment

- Unified Command Suite (UCS). Mobile command and control system. Provides communications to command, techical references, and information databases.
  - Data: UHF/VHF, SATCOM, INMARSAT, NIPRNET, SIPRNET, and Video
  - Air Transportable by C-130, C-141, C-5, C-17





# CIRT (H) RECON Platoon

Personal Protective Equipment (PPE).
 Standard chemical defense equipment for warfare agents, Level A and Level B Ensembles for hazardous material protection.



- RECON Trailer and prime mover
- Cascade system
- Conducts site assessment (identify, classify, sample collection)
- Determines protective measures and PPE requirements
- Emergency casualty extraction



Picture of RECON
Decon line

### CIRT (H) MCD Platoon

- MCD Trailer and Prime Mover
- Operational within 30 minutes
- 20 non-ambulatory per hour
- 75 ambulatory per hour
- Work rest cycle approximately two hours (decreased during Heat Category 3-5 conditions

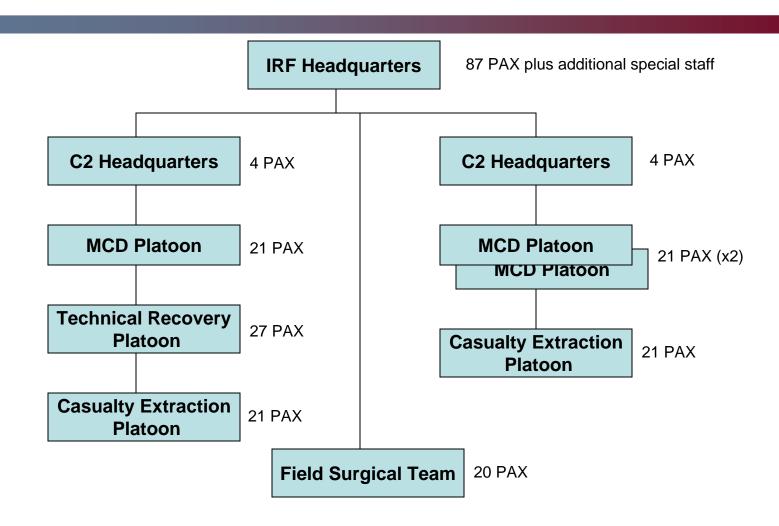






Mass casualty Decontamination Tent

### **CIRF Balance**



Remaining 247 PAX

### Balance of CIRF

- 3 additional MCD platoons (3 DECON trailers and prime movers and MTOE equipment)
- 2 casualty extraction platoons (2 DECON trailers and prime movers and MTOE equipment)
- C2 and service support elements for sustained operations (Battalion and 2 Company headquarters and MTOE equipment)
- Remainder of Field Surgical Team (MTOE equipment)
- Technical Rescue Platoon (1 Recon Trailer and prime mover and MTOE equipment)

### **Technical Recovery Platoon**

- Listening device magnifies faint or distant sounds
- Thermal imaging camera images through walls can assist Search And Rescue teams in locating victims
- Powered Air Purifying Respirator (PAPR) provides user with constant, filtered airflow and positive pressure
- Training for confined space entry
- Training for vehicle extraction
- Training for collapsed structure recovery





### Casualty Extraction Platoons (x2)

- Personal Protective
   Equipment (PPE). Standard
   chemical defense equipment
   for warfare agents, Level A
   and Level B Ensembles for
   hazardous material
   protection.
- DECON capability
- 8 two-man extraction teams per platoon



### **CIRF Total Capability**

- 1 x RECON Platoon 3 site assessment teams for multiple locations or continuous coverage at single location.
- 4 x MCD Platoon one to four MCD sites. Capable of 80 nonambulatory and 225 ambulatory per hour. Requires augmentation for operations greater than 2 hours.
- 2 x Casualty Extraction Platoons provides up to 20 entry teams to extract casualties.
- 1 x Technical Recovery Platoon provides up to 10 specialty entry teams to extract casualties.
- 2 Company Headquarters provides support to sustain platoons for continuous operations
- 1 Battalion Headquarters provides C2 and communications capability for continuous operations
- 1 Field Surgical Team provides medical support to the CIRF

### **CIRF Elements**

	Personnel	Equipment	Capability
CIRT (L)	23	Mobile commo set  Mobile RECON set  1 LMTV (x1)  Cmd and Ctl HMMWV (x4)	Site Assessment Command and Control Communications Support Advise Prepare for follow-on forces
CIRT (H)	64	Unified Command Suite MCD trailer and prime mover RECON trailer and prime mover C2 HMMWVs (x4) LMTVs (x4)	Command and Control Communications Site Assessment Casualty Extraction (10 tms) Mass Casualty Decon (1 plt) Support Advise Prepare for follow-on forces
CIRF 4	311 plus 8 additional Special Staff	Unified Command Suite 4 MCD trailers with F-550s 4 RECON trailers with F-550s 20 HMMWVs 29 LMTVs	

24

### **CIRF Concept**

- Can be inserted by civilian or military ground, rail, or air transportation
- Provides an initial response team to assess the incident scene
- Provide Command and Control
- Establish communications
- Support civil authorities at incident scene
- Assess current and projected consequences
- Advise on response measures
- Chemical, biological and/or radiological assessment of incident scene (identify, classify and sample)

### Additional Special Staff Requirements

- Engineer Officer
- PAO
- Finance Specialist
- Legal NCO
- Contracting Officer
- Technical Escort
- Nuclear Officer SME
- Environmental Specialist

# Chemical Biological Defense Program Science & Technology

### "Science for the Warfighter"

Mr. Fred Crowson

Chemical/Biological Defense Program (CBDP)

Joint Science & Technology Office (JSTO)

Chemical/Biological Technologies Directorate (RD-CB)

Defense Threat Reduction Agency (DTRA)

26 June 2008





### The S&T Arm of the CBDP





**Service Unique** 

### Warfighter S&T at All Levels













**Future** 





### Prioritized User Requirements

#### **JRO Joint Priority List**

- 1. Chemical Standoff Detection
- 2. Biological Standoff Detection
- 3. Chemical Point Detection
- 4. Biological Point Detection
- 5. Integrated Early Warning
- 6. Radiological Standoff Detection\*
- 7. CBRN Reconnaissance
- 8. Field Analytics
- 9. Respiratory and Ocular Protection
- 10. Biological Prophylaxis
- 11. Radiological Point Detection\*
- 12. Percutaneous Protection
- 13. Personnel Decontamination
- 14. Battle or Operating Enviro Management Systems
- 15. Chemical Prophylaxis
- 16. Battle or Operating Environmental Analysis
- 17. Fixed Site Collective Protection
- 18. Equipment Decontamination
- 19. Fixed Site Decontamination & Restoration
- 20. Biological Therapeutics
- 21. Expeditionary Collective Protection
- 22. Radiological Prophylaxis\*
- 23. Medical Diagnostics
- 24. Chemical Therapeutics
- 25. Methods of Control of Contaminated People
- 26. Medical Surveillance
- 27. Radiological Therapeutics
- 28. Hazardous Waste Control
- 29. Remains Disposition
  - \* Not addressed in CBDP S&T









#### **JPEO S&T Needs**

- 1. Automated Multi-Platform Sample Preparation
- 2. Integrated Early Warning
- 3. Decontamination
- 4. Medical Therapeutics and Prophylaxis
- 5. Biological Point Detection/Identification
- 6. Chemical Point Detection/Identification
- 7. Improved Respiratory TIC/NTA Filtration
- 8. Collective Protection
- 9. Improved Radiological Detection/Identification
- 10. Open Community of Interest (COI) Medical and CBRN Data Sharing
- 11. CBRN Tactical Technologies
- 12. Individual Protection (Improved MOPP)
- 13. Information Systems (Data Backbone)







SENSE







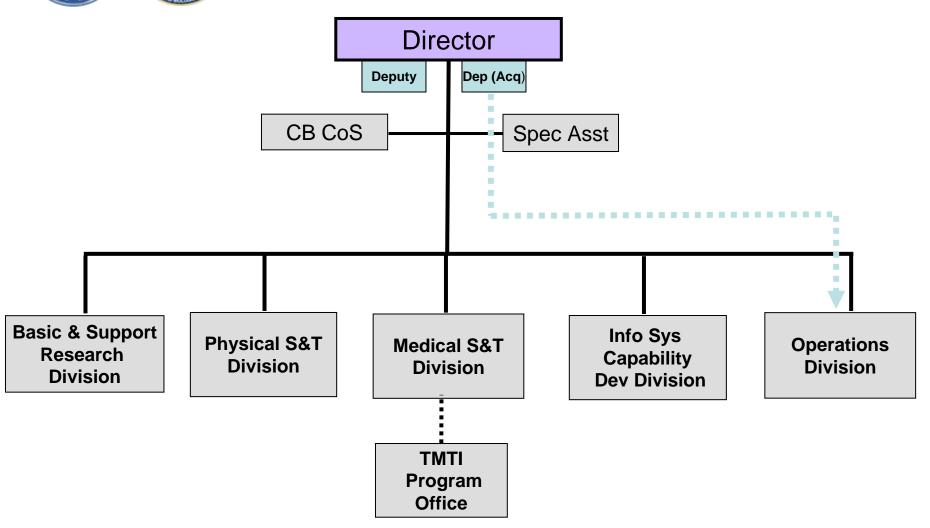


SHIELD

SHAPE



## New Chemical-Biological Technologies Directorate





### JSTO Mission and Vision



#### **VISION**

The JSTO will be the leading authority in Chemical and Biological Defense with recognized expertise in the development of future technology solutions that render the impact of chemical and biological hazards ineffective.

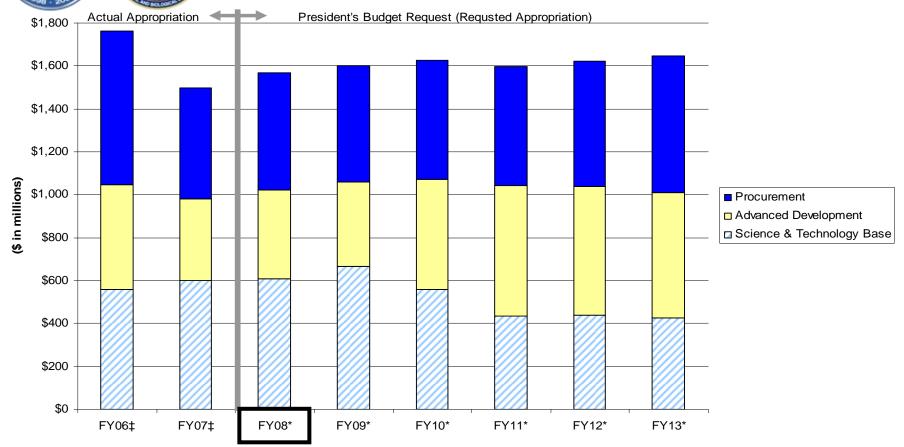
#### **MISSION**

The JSTO manages and integrates the development, demonstration, and transition of timely and effective chemical and biological defense solutions for the Department of Defense while serving as the focal point for science and technology expertise.

The JSTO will provide the most innovative capabilities by collaborating with mission partners, other government agencies, industry and academia.



### CBDP FY2008 President's Budget



#### **Goals**

- Address future challenges (NTAs, emerging threats, transformational medical technologies) and improve the T&E infrastructure
- Provide advanced capabilities to the warfighter



### International Agreements

### Multilatera





Australia

Belgium

Canada

**Czech Republic** 

**France** 

Germany

Hungary

Israel

Japan

Netherlands

**New Zealand** 

**Poland** 

Romania

Singapore

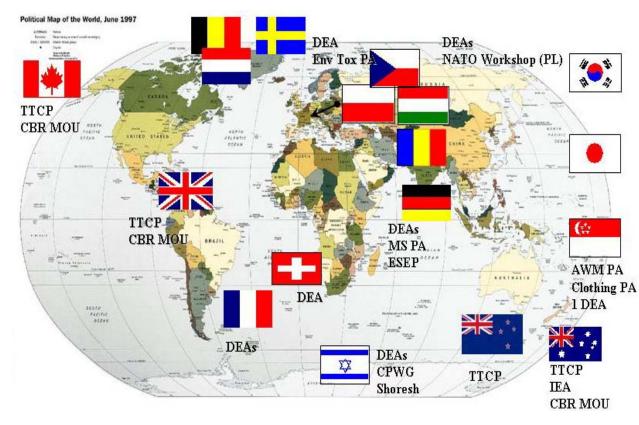
South Korea

Sweden

**Switzerland** 

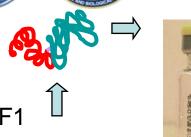
**United Kingdom** 

### **Bilateral**





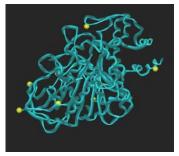
### **Pretreatments**





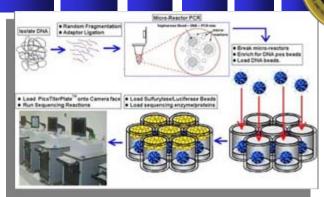
**90% (18/20)** Macaques Protected from Aerosolized Plague

Efficacy of the Plague Vaccine Candidate



Recombinant Human Acetylcholinseterase

Generation and
Evaluation of
PEGylated
Recombinant Human
Acetylcholinesterase
as an Optimal OPBioscavenger



454 sequencing technology

Novel Conserved Targets for Multi-Agent Biodefense Vaccines using High-Throughput Population Genomics



Stimulation of Broad Spectrum Protection via Toll-Like Receptors 7, 8 and 9

Immune SignallingPathway

Transition mature candidates to advanced development; develop multiagent and molecular vaccines; improve effectiveness of vaccines and boost innate immunity to provide broadspectrum protection; develop broad-spectrum chemical agent pretreatments

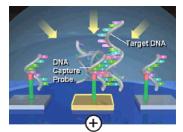


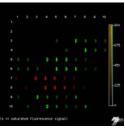
### **Diagnostics**











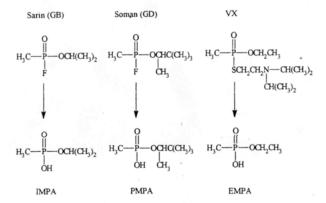
Molecular Methods for Detection and Identification of Biological Warfare Agents



Integrated Simultaneous Detection of Multiple Biological Warfare Agents



Multi-Center Evaluation of Sample Processing Methods for Nucleic Acid Extraction



Novel Analytical Screening Methods for Chemical Warfare Agents and their Degradation Products.

Support JBAIDS block development strategy; exploit new technologies to provide rapid presymptomatic diagnosis; develop assays for rapid diagnosis of chemical agent exposure



### **Therapeutics**





Sulfur Mustard Inhalation Toxicity in Lung Epithelium and Macrophages - Protection by Macrolide Antibiotics

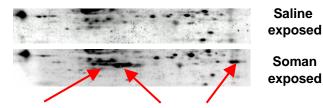


Evaluation of the Efficacy of Candidate Antivesicant Ophthalmic Treatments against Ocular Sulfur Mustard (HD) Injury



Smallpox Drug Evaluation Models to Meet US FDA Animal Efficacy Rule

Therapy for Smallpox and Other Orthopox Viruses



Nerve agent exposure induces significant changes in the phosphoprotein profile of the brain

Proteomic Analysis of Neural Signaling Pathways Involved in Nerve Agent-Induced Seizures and Subsequent Neuropathology – Identify Targets for New Neuroprotectant Development

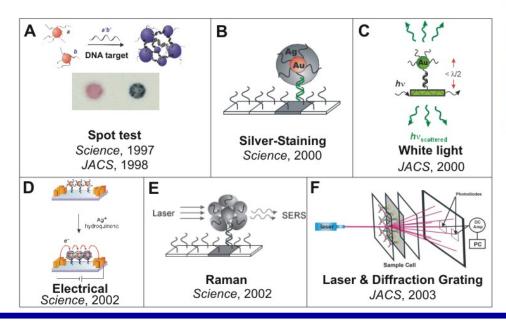


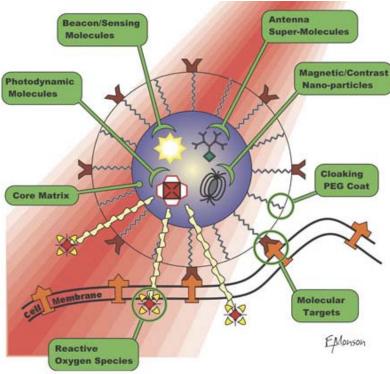
## Nano-enabled Diagnostics and Therapeutics



#### Advectus's Nanocure™

- Nanoparticle-based formulation for the delivery of approved chemotherapeutic (doxorubicin) that does not cross the blood-brain barrier
- Outer layer attracts lipoproteins that camouflage them from the body
- Blood-brain barrier treats the particles as if they were low-density lipoproteins (LDL) - cholesterol





### DNA-based diagnostics without PCR

- faster temporally
- diagnostically earlier
- more sensitive
- fewer false positives



### Radiological Therapeutics



### **Objectives:**

- Develop safe and efficacious radioprotectants (prophylaxes) and post-irradiation therapeutics for Acute Radiation Syndrome (ARS) for gastrointestinal and pulmonary tracts
- Develop a diagnostic chromosomal biodosimetry



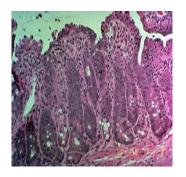
- Accelerate transition of mature candidates to product development
- Leverage on promising candidates that are currently in preclinical development for radiation-oncology

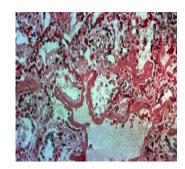
#### **Accomplishments:**

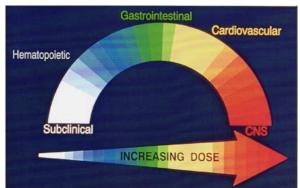
- 2008: Selected Prochymal<sup>™</sup> for FDA-approval
- 2008: Selected CBLB502 (Flagellin) for FDAapproval











#### **UNCLASSIFIED**



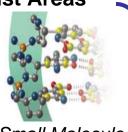
## Transformational Medical Technologies Initiative (TMTI)



#### **Scientific Thrust Areas**



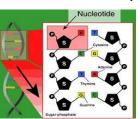
Genomic
Identification



Small Molecule Discovery



Protein Based Therapeutics

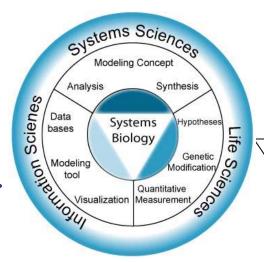


Nucleotide Therapeutics



Human Immune Enhancement

Integrated Cross-Cutting Technologies



Microarray Technology Bioinformatics Proteomics Genomics siRNA

**Deliverables** 



#### **Broad Spectrum Treatments**

- Hemorrhagic fever viruses
  - Intracellular bacterial pathogens



Genetic ID & Analysis

An innovative approach using revolutionary technologies to expedite the development of products to counter emerging biological threats



### Transformational Medical Technologies Initiative (TMTI)



### Goals

(QDR driven)

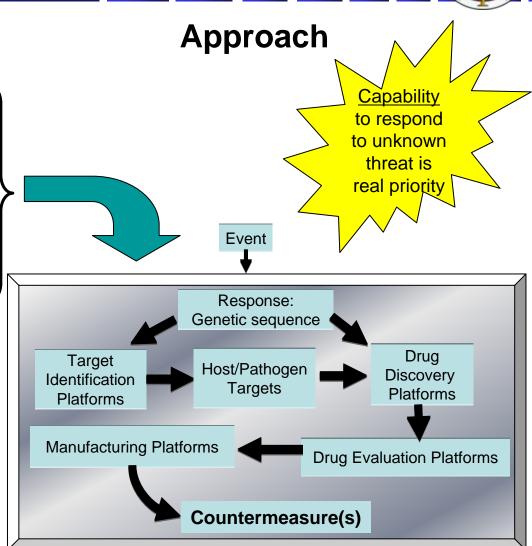
### Develop at least two platform technologies

Enabling technologies: Capability to rapidly develop new countermeasures

### Build integrated library: Genetic sequences of BW agents

Capability to rapidly sequence and characterize novel threats

Develop two broad-spectrum countermeasures to Investigational New Drug filing



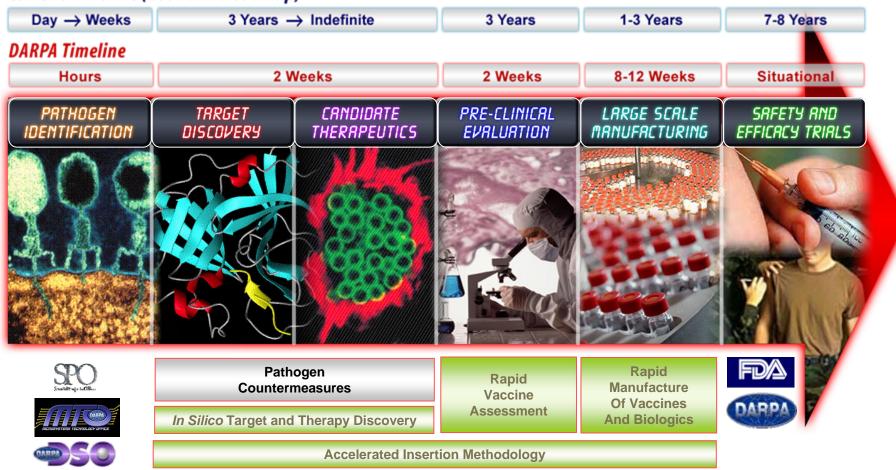
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## DARPA Thrust: Accelerating Critical Therapeutics



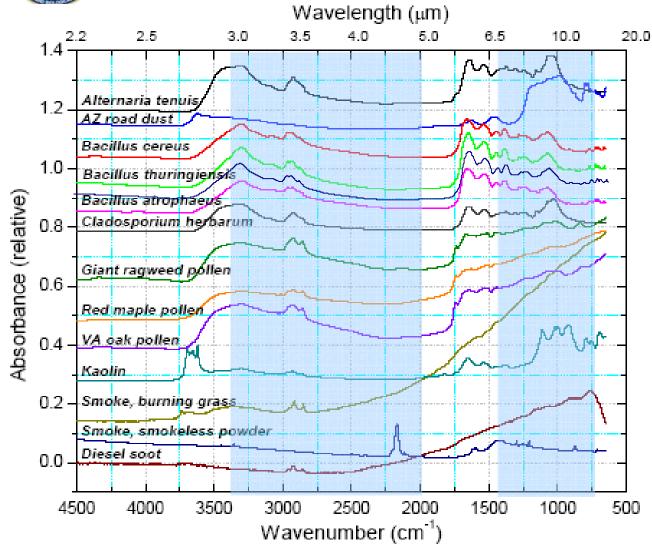
#### Current Timeline (2004 NIH Roadmap)





## Biological Detection: "Traditional" Approaches are Insufficient







### **Biological Detection Systems**



#### **Current:**



#### **JBPDS**

- UV-LIF trigger
- Virtual impactor sample collection
- Immunoassays 10 agents
- 15 20 min response time



#### **JBSDS Incr I**

- IR/UV-LIF
- 5 km IR scatter particle detection
- 1 km UV-LIF bio discrimination

#### **Advanced:**



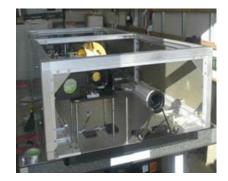
#### Invitrogen

•MAPP-DS



#### **ECBC**

•Tactical Biological Detector



#### **WANDER**

- IR depolarization ratio
- Potential bio discrimination

#### **DARPA FASTREAD**

- Femtosecond Adaptive
   Spectroscopy Techniques
- Spectral/temporal info in the backscattered signal
- Potential bio identification





### Chemical Detection Systems



#### **Current:**



#### ACADA

- IMS
- Miosis level
- 1 min response



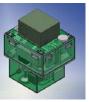
#### **JSLSCAD**

- FT-IR
- 1/2 km range
- 360 scanning



#### **JCSD**

- IR-Raman
- 40 mph

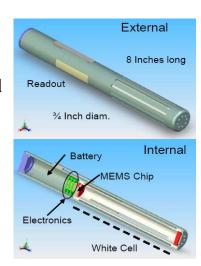


#### **Advanced:**



#### **JCAD**

- IMS
- Moisis level
- 2 lb



#### ChemPen

- MEMS
- FT-IR



#### FirstDefender<sup>TM</sup>

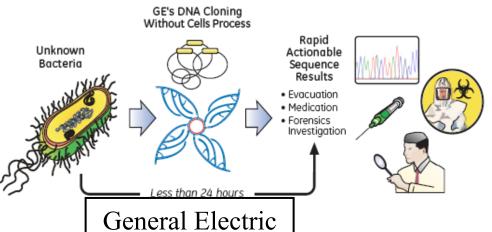
- IR-Raman
- Bulk liquids

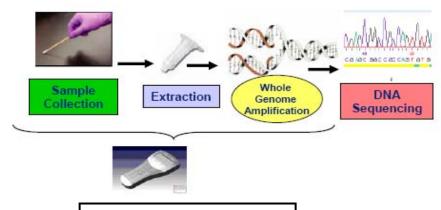
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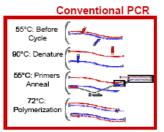
### Detection Concepts Using Genomic Sequencing

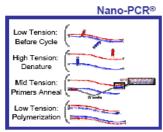






Ibis Biosciences





Comparison of conventional PCR and Nano-PCR® amplification processes



Left: Proposed Effort, benchtop Nano-PCR amplification Right: Product Vision, handheld amplification and pathogen ID from raw sample



Nanobiosym, Inc
• DARPA MOLDICE



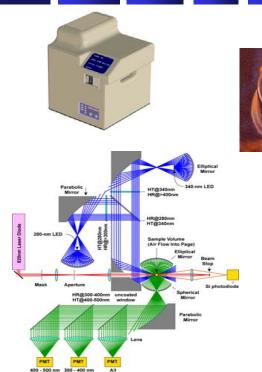


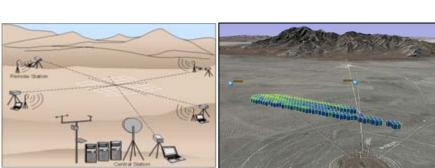


## Detection and Identification Recent Accomplishments



- Lightweight Integrated CB Detection System
- Low Cost/Low Power UV
   Detection
- Optical Acceptance
   Measurements for Test &
   Evaluation Antigens
- •Range Test Validation System



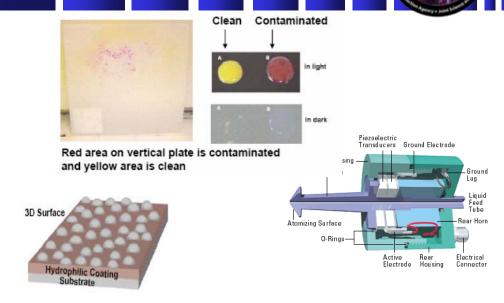




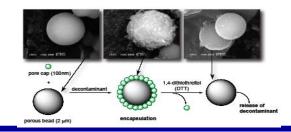


### Hazard Mitigation (Decontamination)

- Decontamination
   Assurance Spray
- Energetic and kinetic
- Self-Detoxifying Surfaces/ Reactive Coatings
- Smart Systems
  - > Sense
  - **≻**Respond
  - ➤ Signal







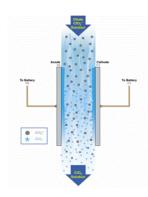
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## Hazard Mitigation (Decontamination) Recent Accomplishments

- Identified a candidate technology for intra-theater transportation of contaminated human remains
- Transitioned high performance liquid chromotography (HPLC) methodology for determining decon residual
- Developed a new CIO2 formulation with enhanced broad-spectrum chemical and biological hazard reduction efficacy
- Discovered an advanced surfactant system that will lead to development of environmentally-safe product for chemical removal augmentation
- Completed a "decon wipe" development for sensitive surfaces







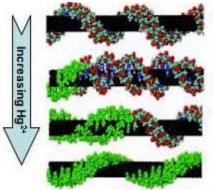




### Individual Protection





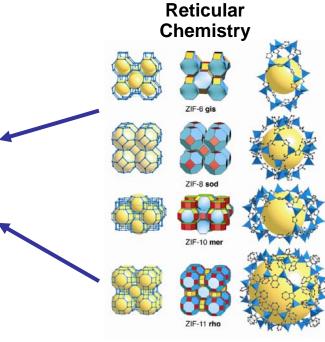


DNA changes structure (electronic properties) to ions and chemicals

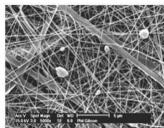
**Nano-Fibers** 

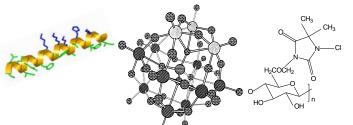


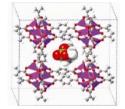
**Self-Detoxification** 

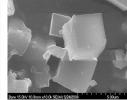












Nanomaterials for sensing, protection and decontamination



## Protection Recent Accomplishments



 Completed transition of end-of-service-life indicator for gas mask canister and novel closures for protective garments





 Focused individual protection mid-term efforts on low-burden and novel concepts to integrate with a developmental warfighting ensemble



 System demonstration of a catalytic oxidation air purification technology to support transition of this technology



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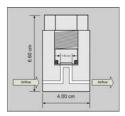


### **Test & Evaluation** Methodologies & Capabilities





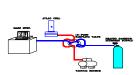
**Test Standard Development** for Collective Protection **Technologies** 



Characterization of **Swatch Test CRMs** 

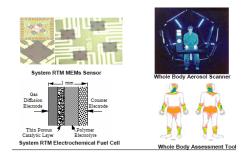


**IPE Field Operations Effects Standard** 

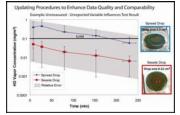




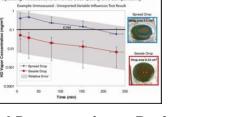
**TIC/Battlefield Contaminant** Set Standard for IPE & ColPro



Standardized Procedure for **Individual Protection Whole System Assessment** 

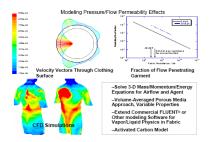


**Improved Decontaminant Performance Evaluation Methodology** 



Infrastructure Improvements For Low-Level Agent **Detection as Required by Current ORD KPPs** 16% Toy respon JPD Threshold JPD Objective / 1% Tox Respo JSSED Threshold '04 ('03 Objective FY07 Program Pro Reporting Limit

**Achieving Low-Level Detection** of Residual Agent and Reaction **Products** 



**Body Region Hazard Assessment Model** 



**Decon Hazard Byproduct and Residual Agent Test Standards** 





**Chem-Bio Agent Resistance** Test (CBART)



## Non-Traditional Agent (NTA) Facility





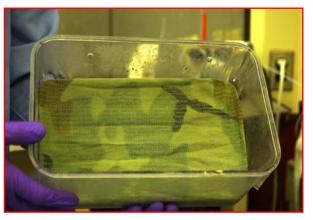
**Notional Concept for NTA Facility** 



**Materials Compatibility Tests** 



Personal Protective Equipment



**Decon to Safe Levels for Disposal** 



**Decontamination Efficacy Tests** 





## Advanced Technology Demonstrations - FY07-FY10





Hackensack University Medical Center Mobile Emergency Trauma Unit



**Biological Combat Assessment System (BCAS)** 





**CBRN Unmanned Ground Reconnaissance (CUGR)** 





**Expeditionary Biological Detection (EBD)** 





**Interagency Biological Restoration Demonstration (IBRD)** 



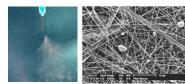
**Systems of Systems Decon** 







Nano-Fibers





**Agent Detecting Fibers** 

Demonstrate an integrated materials concept in FY2010 using thermal burden as an independent variable to achive low-burden protection



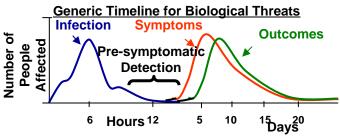
## Information Systems Technology



## Bioinformatics: Key to Systems Biology and Medical S&T

#### **Essential for:**

- Expression analysis for molecular function interrogation technology dependent (genomics proteomics, metabolomics)
- Data mining/Database management
- Machine learning
- Molecular structure & molecular interaction prediction
- Modeling biochemical pathways and biological networks



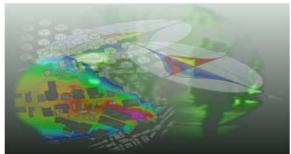
Pre-Symptomatic Detection

## Modeling/Data Assimilation: Relevant to Physical S&T

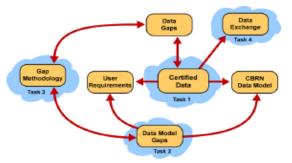


Data Glove

Allows silent communication between soldiers through uniform (glove) based sensors.



**CBRN Modeling** 



#### **Data Backbone**

Utilizing current IT to log, evaluate, synthesize disparate sources of CBRN information and develop predictive models

#### **UNCLASSIFIED**

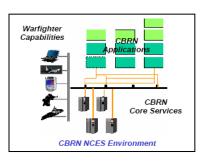
## Information Systems Technology Recent Accomplishments



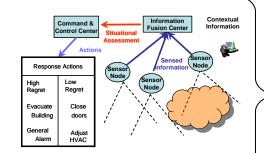




**JWARN Component Interface Device (JCID) software-based** sensor system

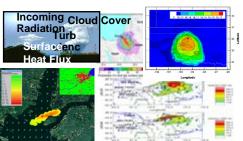


**Common CBRN Software Services** 

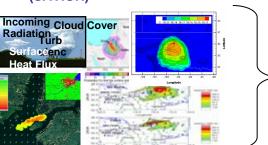


Sensor Alert Verification for **Incident Operational Response** (SAVIOR)



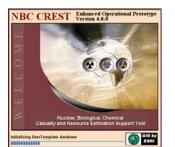


**Rapid Assimilation of Sensor Data** 



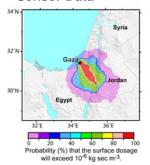
**Environmental Sciences** 



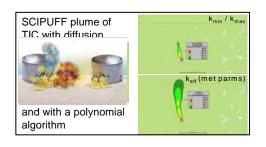


**Urban Capabilities** 

**NBC CREST** 



**Climatology Database** 



**Modeling the Atmospheric Chemistry of TICs** 



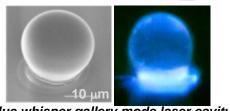


### **Basic Research**



#### Nocera, MIT – Ultrasensitive Chem-/Bio-Optical Sensors on Small Scales

Developed blue semiconductor nanocrystal laser, micro laser cavities for chemosensor, and induced chemical sensitivity of nanocrystal quantum dots (Nocera: 2007 Mack Award, ACS Harrison Howe Award)



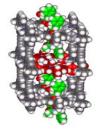
Blue whisper gallery mode laser cavity

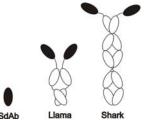
#### Mirkin, Northwestern U. - Molecular Machines

Developed supramolecular catalysts for acyl transfer reactions; designed flexible type of supramolecular allosteric catalysts and MOFs, pseudorotaxane supramolecular structures

## Goldman, NRL – Development and Testing of Recombinant Single Domain Antibodies

Developed hyper diversified shark new antigen receptor display library to be used against toxins. Expressed sdAb and variants characterized in terms of stability and regenerability (Goldman: 2006 Alan Berman Research Publication Award)



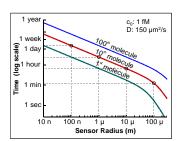






#### Whitman, NRL – Biophysical Fluid Dynamics Near Surfaces

Developed total internal reflection fluorescence microscopy system to image single fluorophores, developed non-equilibrium biomolecular molecular dynamics (BioNEMD) computational capability (Whitman: Nanotech Briefs Magazine's Nano 50 Award)



Calculation of the time required for DNA molecules at 1 fM to diffuse to a sensor surface versus sensor size.

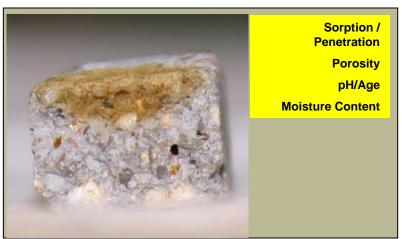


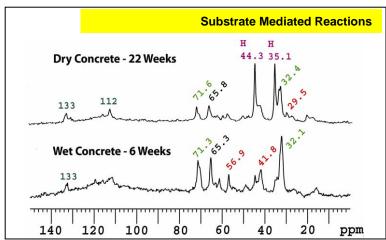


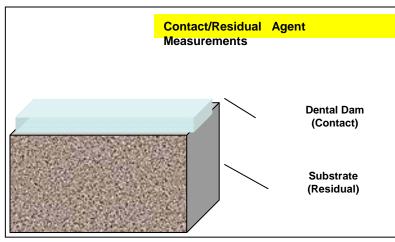
## Threat Agent Science

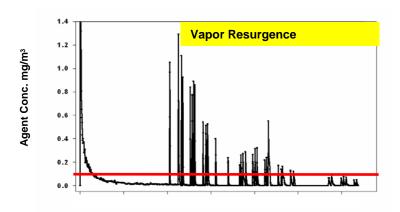


#### **Environmental Fate of Agents**











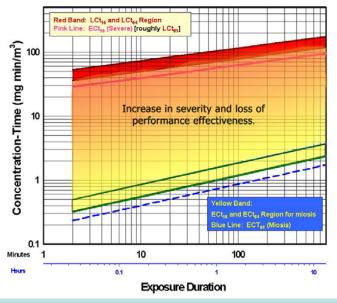
## Threat Agent Science

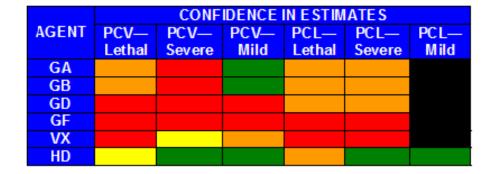


#### **Low-Level Chemical Agent Exposure Effects**









KEY: ■ no estimate; ■ low; ■ high; □ moderate; ■ moderately low

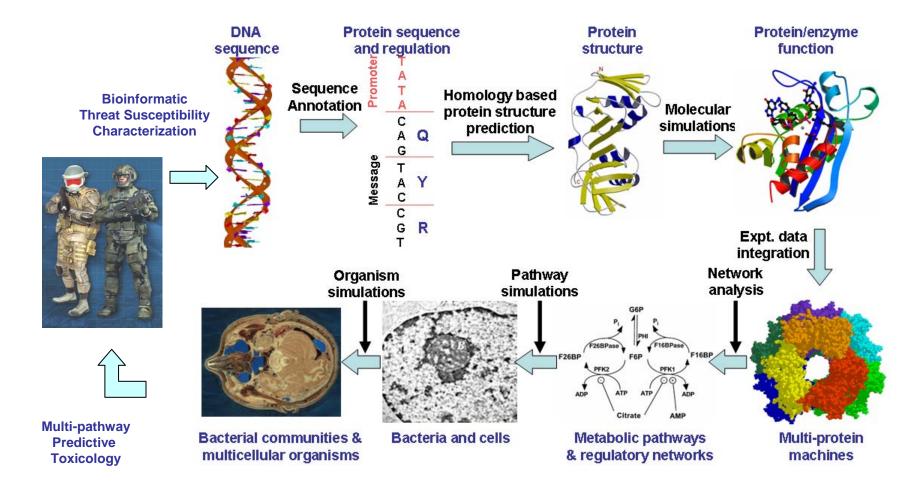
#### **Science-Based Exposure Standards for Deployed Forces**



## Threat Agent Science



## Computational chemistry and biology enables full spectrum real time response



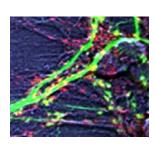


# Cognitive Science Impacts on CBD and the Warfighter

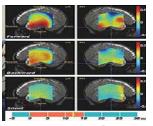
- Chemical / biological threats target central nervous system (CNS) to impair sensory, motor and cognitive function
  - Biological neurotoxins
  - Chemical nerve agents
  - Nano-enabled?



- Warfighter performance studies "cognitive readiness"
  - Understanding cognitive functions under stress during CW/BW event
  - Understanding molecular processes of neuron and brain function after exposure CW/BW agent



Neurons grown in culture and labeled to measure plasticity in a living system. (courtesy Liu Laboratory, MIT)



Non-Invasive Blood Monitoring

Hitachi – prototype allows simple control of switches with thoughts by monitoring blood flow associated neuron firing



## **Summary**

- User's needs and priorities are met by providing timely scientific information and technology transitions
- Processes are in place that find and fund sound science and innovative approaches from concept to advanced development including international collaborations
- Test and evaluation methodology and capability development and procedures for FDA approval are an integral part of the S&T program
- Projects align with spiral upgrades and transition technologies to meet S&T needs of acquisition programs





## Words for thought...

"New ideas pass through three periods:

- ✓ It can't be done.
- ✓ It probably can be done, but it's not worth doing.
- ✓ I knew it was a good idea all along!"
  - Arthur C. Clarke

"If we knew what we were doing, it wouldn't be called Research."



— Albert Einstein

Questions?



## Domestic Nuclear Detection Office (DNDO)

NDIA
Joint CBRN Defense Conference

DNDO Overview

June 25, 2008



Dr. Chuck Gallaway
Deputy Director, DNDO



## The Radiological and Nuclear Threat

- Nuclear weapon
- Improvised nuclear device (IND)
- Radiological dispersal device (RDD)







Devices can vary greatly in size.

## DNDO Mission and Objectives

DNDO was founded on April 15, 2005 with the signing of NSPD 43 / HSPD 14. It is a jointly-staffed, national office established to improve the Nation's capability to detect and report unauthorized attempts to import, possess, store, develop, or transport nuclear or radiological material for use against the Nation, and to further enhance this capability over time.

- Develop the global nuclear detection and reporting architecture
- Develop, acquire, and support the domestic nuclear detection and reporting system
- Fully characterize detector system performance before deployment
- Establish situational awareness through information sharing and analysis
- Establish operation protocols to ensure detection leads to effective response
- Conduct a transformational research and development program
- Provide centralized planning and integration of USG nuclear forensics programs



## DNDO: An Interagency Office

- DNDO is an interagency office comprised of detailees and liaisons from:
  - Department of Energy
  - Department of Defense
  - Department of Justice/Federal Bureau of Investigation
  - Department of State
  - Nuclear Regulatory Commission



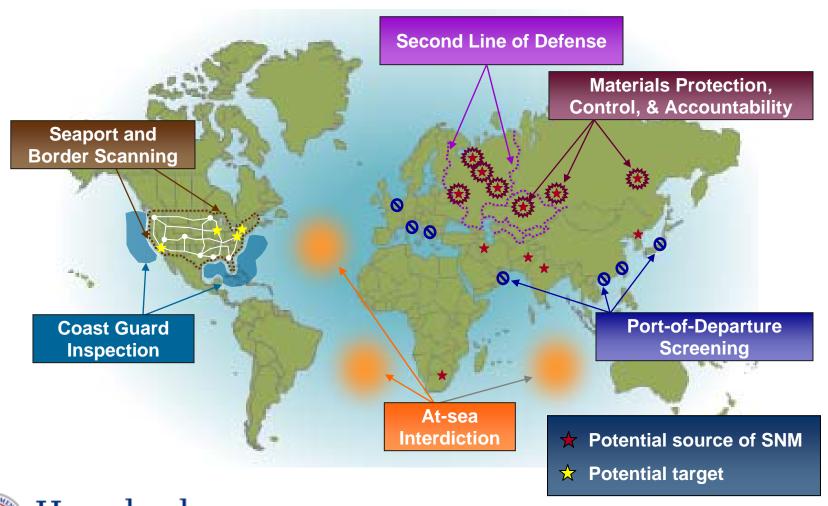
- U.S. Coast Guard
- Customs and Border Protection
- Transportation Security Administration
- The National Labs, private industry, and academia conduct research that directly supports the DNDO mission.
- DNDO maintains strong relationships with Federal, State, and local entities to help develop and deploy the domestic nuclear architecture.





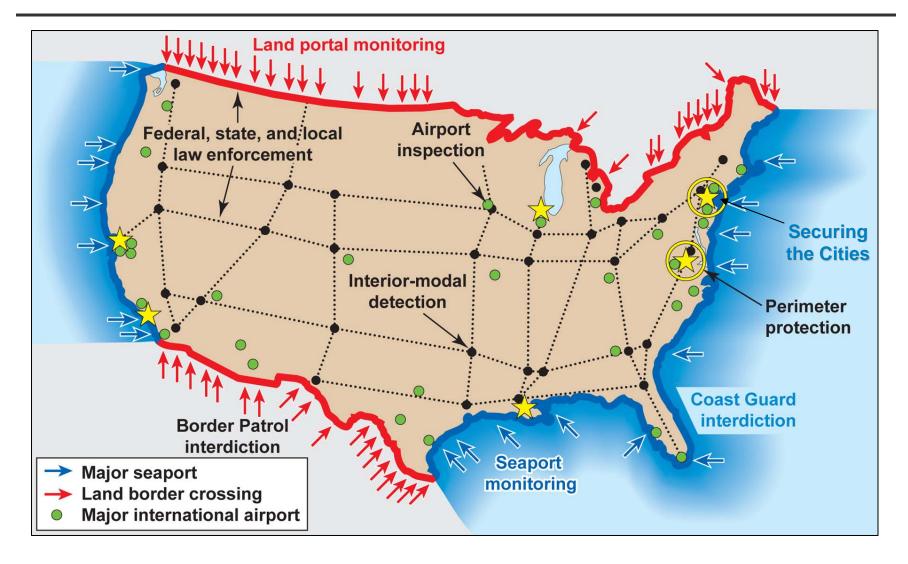
## Global Nuclear Detection Architecture

A multi–layered, international system offers multiple opportunities for detection





## Domestic Nuclear Detection Architecture





## Ports of Entry (POE) Mission

#### Strategy/Objectives:

- Close vulnerability gaps (threat pathways) at POEs (Land, Rail, Sea Cargo, Air Cargo)
- Minimize impact on the flow of commerce
- Strengthen Partnerships with POE Stakeholders
- Enhance POE Domain and Situational Awareness





#### **Cargo Scanning Goals:**

- ✓ Complete 100% of Southern border container traffic by the end of CY 2007
- ✓ Complete 98% of seaport container traffic by the end of CY 2007
- Complete 98% of land and seaport container traffic by the end of CY 2008
- Complete 100% of Northern border container traffic by the end of CY 2009



## Other Cargo Venues

- Air Cargo
- International Rail
- On-Dock Rail
  - Established a Rail Test Center (RTC) for intermodal radiation detection at the Port of Tacoma (2007)











## Maritime Mission

#### Objectives:

- Deploy maritime detection and reporting capabilities
- Develop and implement maritime CONOPS for alarm resolution & response protocols
- Provide rad/nuc detection training





#### **Program Activities:**

- West Coast Maritime Pilot
  - Seattle, Washington
  - San Diego, California
- Enhance rad/nuc detection capability for select USCG boarding teams
- Deliver Maritime Module for Rad/Nuc Detection Program Management Handbook

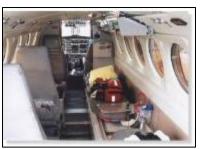




#### **Aviation Mission**

#### Strategy:

- DHS components working to address threat posed by IGA
  - Regulations
  - Deployment of COTS systems to Aircraft POEs
  - Evaluate COTS & next-gen detectors and alternate CONOPS
- Work with Canada and Mexico to develop a North American Nuclear Detection Architecture





#### **Program Activities:**

- Scan 100% of I-GA at domestic APOEs
- Evaluate enhancements for:
  - Detector performance
  - Scanning procedures
  - Reachback and alarm resolution process
- Identify required follow-on capabilities





### Non-POE Land Border Mission

#### **Boundary Defenses**

- Fences
- Natural Barriers

#### Intrusion Detection

- Unattended Sensors
- Camera Systems







 Unattended Sensor Concepts

#### **Patrol Operations**

- Observation
- Response/Interdiction

# TOROGOT PALED TO THE PALED TO T

 Vehicle-Mounted and Human-Portable Systems

#### Interior Checkpoints

- Traffic Screening
- Vehicle Inspection



 Fixed and mobile RPMs for Permanent & Tactical Checkpoints

#### **Ongoing Activities:**

- Joint field evaluation of Radiation Portal Monitors (RPMs) and Personal Radiation Detectors (PRDs)
- Phased Deployment Implementation Plan (PDIP) for CBP and DNDO through FY12, based on field evaluations of equipment
- Equip 21 sectors (northern and southern borders)



## Domestic Interior Mission

#### Strategy:

- Enhance domestic detection capabilities through:
  - Training and exercises
  - Regional reachback
  - Pilot deployments
  - Program management handbooks





#### **Program Activities:**

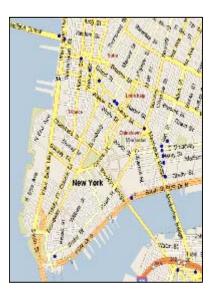
- Complete Southeast Transportation
   Corridor Pilot (9 States and DC) with
   full scale exercise
- Evaluate Surge Program with DOE
- Develop statewide rad/nuc detection program in Florida
- Continue training
  - Over 4,000 personnel trained to date
  - Plan to train 1,700 in 2008



## Securing the Cities Initiative

#### Objective:

 Implement an architecture for coordinated detection and interdiction of illicit R/N materials within the NYC region.







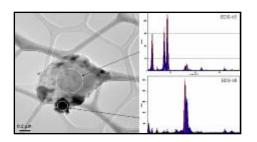
#### **Program Activities:**

- Develop and implement technical and operational concepts for scanning operations
  - Mobile checkpoint
  - SUV-based detection operations
  - Maritime rad/nuc scanning in New York,
     New Jersey and Connecticut
- Develop C4 regional capability
- Deploy rad/nuc detection equipment
- Continue training
  - Over 2,000 personnel to date
  - Up to 4,500 personnel in FY 2008
- Conducted four roadways-based and two maritime drills with multiple regional agencies

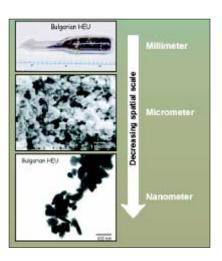


## Technical Nuclear Forensics Mission

- National Technical Nuclear Forensics Center (NTNFC) provides national-level stewardship, centralized planning and integration for an enduring national technical nuclear forensics (TNF) capability
  - Takes an end-to-end global perspective to integrate all relevant national agencies and capabilities, including DHS, DOE, DoD, DOS, DOJ, IC
  - Ensures national TNF capabilities meet law enforcement, homeland security, and national security requirements for accuracy, timeliness, and credibility to support the broader goal of attribution
- NTNFC also serves as the "capability provider" for pre-event / pre-detonation rad/nuc materials forensics









## Detection Techniques

#### Passive

- Signal emissions generated by target itself
- Relatively simple and inexpensive
- Most familiar and deployed form of radiation detection
- Affected by shielding and masking

#### Radiographic

- X-ray and gamma-ray transmission imaging
- CBP currently deployed ~ 150 units to search for contraband
- Can be expanded to detect high-Z material, including SNM

#### Active

- External stimulation needed to generate measurable signal
- Effective against shielded and masked targets
- Usually involves irradiating target with gammas, neutrons, or other radiation
- Complex, expensive, with potential health effects
- Not yet deployed



## Advanced Spectroscopic Portal Program

#### **Program goals:**

- Detect and identify radiation sources with high confidence
- Provide significant increase in capability from current system
- Decrease the operational impact to CBP and other stakeholders





#### **Current Activities (Summer 2008):**

- System Qualification Testing
  - -Vendor sites and PNNL
- Deployment Readiness Testing
  - -331-G, PNNL
- Performance testing
  - -NTS
- Field Validation
  - -Long Beach, CA
  - -NYCT, NY
  - –Laredo, TX
  - -Port Huron/Detroit, MI



## Human Portable Radiation Detection Systems

#### **Program Mission**:

To develop next-generation handheld and backpack systems

#### **Program Objectives:**

- Improve radiation detector sensitivity
- Improve radioisotope identification and reduce false alarm rates
- Provide clear and actionable signals for system operators
- Provide simplified reachback capability
- Provide field updateable algorithms
- Transfer successful HPRDS systems to acquisition phase for field deployment in appropriate mission areas









## Radiographic Detection

#### Cargo Advanced Automated Radiography System (CAARS)

- Program Goals
  - Develop a radiography system that automatically detects threat materials in mixed commerce without impeding the flow of commerce
  - Improved penetration capability







## Exploratory and Academic Research

#### **Program goals:**

 Develop and demonstrate proof of concept for detection technologies and analysis techniques

#### **Technical goals:**

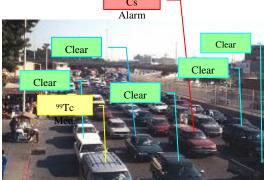
- Explore the limits of physics for the detection and identification of rad/nuc materials
- Explore innovative radiation detection materials for the detection and identification of rad/nuc materials
- Explore innovative analysis and signal processing techniques for the exploitation of gamma and neutron signatures

Explore alternate signatures for detection of radiological and nuclear threats

#### **Progress**:

- Funded the Academic Research Initiative to 22 separate projects in partnership with the National Science Foundation
- Approximately 50 projects addressing all major technical thrust areas:
  - Materials Development
  - Passive Techniques
  - Active Techniques
  - Integrated Approaches

Nuclear Forensics



Concept of Integrated Video and Radiation Imaging



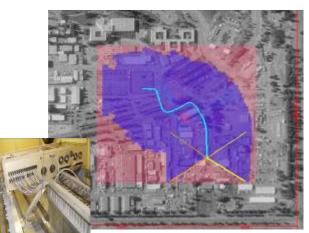
## Advanced Technology Demonstration (ATD)

#### **Program Objectives:**

- Build upon technology concept previously demonstrated under the ERP or equivalent
- Develop and test in a simulated operational environment to generate performance data for cost-benefit decision to transition to commercial system development and acquisition



**IPRL** 



Coded Aperture data

#### **Near Term ATDs:**

- Intelligent Personal Radiation Locator
  - Pocket-sized system with advanced capabilities in identification, directionality, connectivity (FY06 Start)
- Standoff Detection Systems
  - Enhanced standoff detection capabilities in mobile system through imaging, large area, advanced detector techniques (FY07 Start)
- SNM Verification
  - Active interrogation systems for shielded SNM (FY08 start)



## Fully Integrated Operating Environment

- Deployment of detection technologies alone will not ensure mission success
- Provides the necessary technical support to ensure that equipment is used effectively, alarms are resolved accurately, and the appropriate personnel are notified in the event of a legitimate detection of a threat
- Maintains situational awareness by sharing information and databases with the Intelligence Community, counterterrorism resources, Fusion Centers, FBI Joint Terrorism Task Forces, DOE, CBP, and other US agencies, as well as State, county and municipal law enforcement communities
- Programs include:
  - Joint Analysis Center
  - Nuclear Assessment Program
  - Technical Reachback
  - Training, Exercises and Engagements





## National Preventive Rad/Nuc Training

#### Personal Radiation Detection (PRD) Course

 Teaches effective employment of Personal Radiation Detectors (PRD)

#### Detector Enabled Law Enforcement (DELE) Course

 Teaches individual patrol officers to detect, verify, locate, measure, identify, assess, and, if warranted, report radiation and radioactive material

#### Advanced Radiation Detection (ARD) Course

 Teaches individual detection skills using advanced detection equipment and how to apply those skills in a detection team







## Alarm Resolution and Technical Reachback

#### Program mission:

 To provide 24/7 technical capability to facilitate radiation detection alarm resolution and effectively transition to response operations

#### Program Activities:

- Develop analytic tools and reports to assist, evaluate and enhance radiological and nuclear alarm adjudication
- Provide subject matter expertise to Federal, State, and local detection operations
- Operate the National Reachback capability at the weapons laboratories to support alarm resolution
- Established two regional reachback regions dedicated to supporting alarm resolution for state and local authorities



## Summary

# DNDO is working to develop and deploy a global nuclear detection and reporting architecture to reduce the risk from nuclear terrorism.

- Critical vulnerabilities in the existing architecture have been identified and alternatives are being developed
- DNDO maintains an aggressive system development and acquisition process to rapidly deploy detection systems
- Transformational & Applied Research has been identified to reduce risk across other elements of the architecture
- DNDO is providing on-going operational support to the deployed architecture, including support for Federal, State and local implementing partners





# Homeland Security



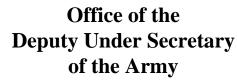
# Testing in a Joint Environment Value Added and Considerations





# Janet Garber





**June 2008** 







UNCLASSIFIED

# Why do we test?



# Support the Warfighter to accomplish mission!

#### DPG Testing 1

September 2006





## Agenda



• Why do we test?

- Introduce Test & Evaluation Office (TEO),
   Deputy Under Secretary of the Army
   (DUSA)
- Provide insight on Chemical and Biological Defense Program (CBDP) testing challenges



## Why Do We Test?



- Determine/verify performance envelope (capabilities & limitations)
- > Evaluate Systems' Effectiveness, Suitability, & Survivability
  - **✓** Assess mission accomplishment
- Identify and Assess Acquisition & Operational Risks
- Certify attainment of:
  - **✓** Technical Performance Specifications
  - **✓** Operational Requirements
  - ✓ Safety
- Verify Correction of Deficiencies
- Address Compatibility/Interoperability/Net Readiness
- > Assist in Determining DOTMLPF Requirements

  Support the Warfighter!

DOTMLPF - Doctrine, Organization, Training, Materiel, Leadership & education, Personnel, & Facilities





# **T&E** Critical to the Warfighter

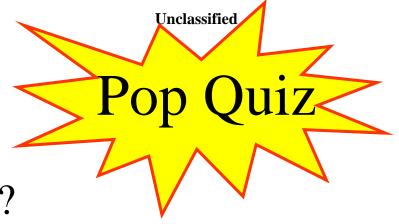


Biological Warfare Agent (BWA) and Chemical Warfare Agent (CWA) performance data provides:

- > Performance envelope
- System limitations
- Insight on how to employ system in the field

Does the System support mission success?







What is Data?

- a. A fact or body of facts
- b. Information that could save your life
- c. An android from a TV series
- d. All the above



Answer: d

Test & Evaluation Office



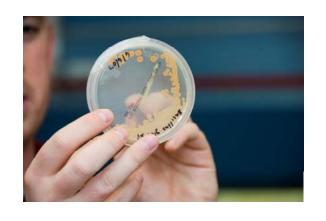
# **Importance of Testing**



- Collecting Data: measure test environment and system under test
- To answer questions:
  - Is the system safe for use?



- Where it works
- Where it doesn't work
- Reliability and Logistic Supportability
- Human Factors, MANPRINT
- Others







# **Importance of Testing** (cont.)



## **Provides Data Needed for Evaluation**

## **Evaluation:**

- Integration of data and analysis from many sources
- To answer questions:
  - Was mission accomplished?
  - Was the system effective, suitable, survivable?
  - How well were requirements met?



Test & Evaluation Office



# Types of Tests: Chemical and Biological Defense



- Developmental/Operational Testing:
  - Data are critical for operational evaluation
  - Surety chamber tests with
    - BWA and CWA
    - BWA and CWA simulants
  - Field tests with BWA/CWA simulants
- Operational Testing
  - Military test participants performing unit missions/tasks
  - Operationally realistic environment

Threat and Environmental Realism Is Key To All Testing



## **T&E Executive Vision**



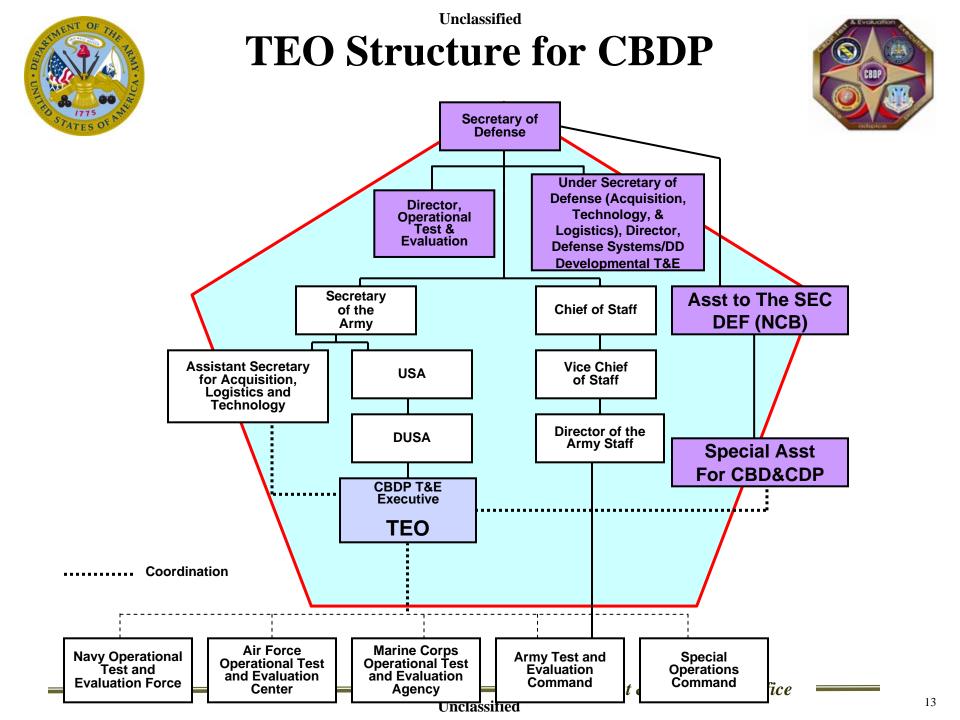
Ensure world class combat and support systems for our nation's Warfighters by providing programs with sound analyses, adequate testing, and credible evaluation procedures supported by robust, efficient and versatile T&E resources, and infrastructure



# Mission of the CBDP T&E Executive



- Ensure Adequate and Credible Testing
- Establish T&E Policy for CBDP
- Plan T&E Infrastructure Investment
- Advocate for T&E Funding
- Promote early T&E community involvement in planning

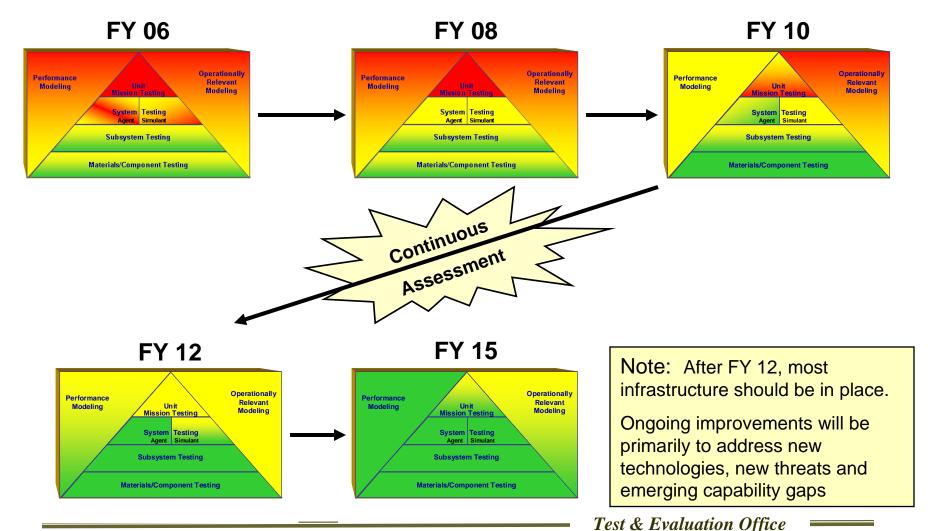




# Assessment and Projection of T&E Infrastructure Capabilities



(Incremental Improvements)



Unclassified Joint, Multi-national, and Interagency CBDP T&E Partners **Natick Soldier Ctr** Dugway Proving GroundUniversity of Utah AFOTEC Det 1 • ECBC • AEC • DTC NAVAIR JHU-APL Virginia/DC OTC • ATEC •EPA •DHS North Carolina OPTEVFOR · Research Triangle Institute •DOT&E **United Kingdom** •MCOTEA • Porton Down •NAVSEA Dahlgren Canada Army Safety Ctr • DRES **Australia** • PEO STRI •NAVSEA NCSC **Investment Sites** 

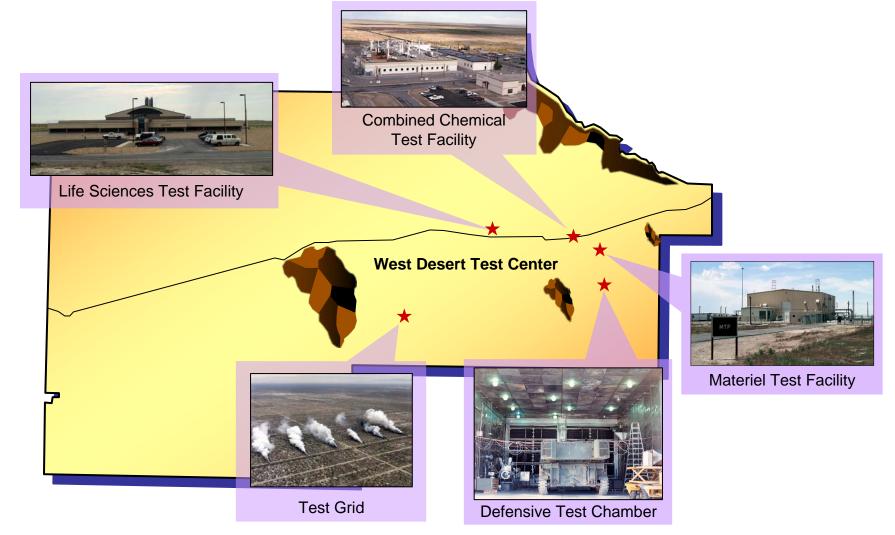
**Unclassified** 

•Eglin AFB
•AFRL



# **Key Dugway T&E Facilities**







## **CBDP T&E Infrastructure**



#### Hardware

- Chambers, instrumentation, equipment, fixtures

#### Software

- Documentation, methodology, source data, M&S
- Written procedures, validation trial data

#### Personnel resources

intellectual capital



# **Multi-Service Testing Considerations**



#### Common set of standards and processes

- Each Service has its own policy and procedures
- MOA for MOT&E
- CBDP T&E Policy

#### Evaluation Reports

- Combined with inputs from all Services, Lead OTA coordinates
- Dissenting evaluations must be included

#### Test Design

- Must accommodate missions of each Service
- Lead OTA coordinates

#### • Staffing TEMPs and Test Plans

Concurrence from each participating OTA



# **Ensuring Test Adequacy**



- Provide test environment with realistic threat portrayal
  - Get the assets for a realistic force laydown
- Chamber DT/OT critical to Operational Evaluation
  - Key performance aspects identified using BWA/CWA in chamber
  - Field performance verified using simulants
  - Accurate correlation between simulant and agent critical to credible evaluation
- Environmental Diversity
  - Simulant dissemination is strictly controlled by EPA restricting test locations
  - M&S is critical to expanding test envelope

Operational Testing Under Battlefield Type Conditions Using Warfighters Critical to Evaluation



# My Focus as the CBDP T&E Executive



#### Support Program Development and Fielding

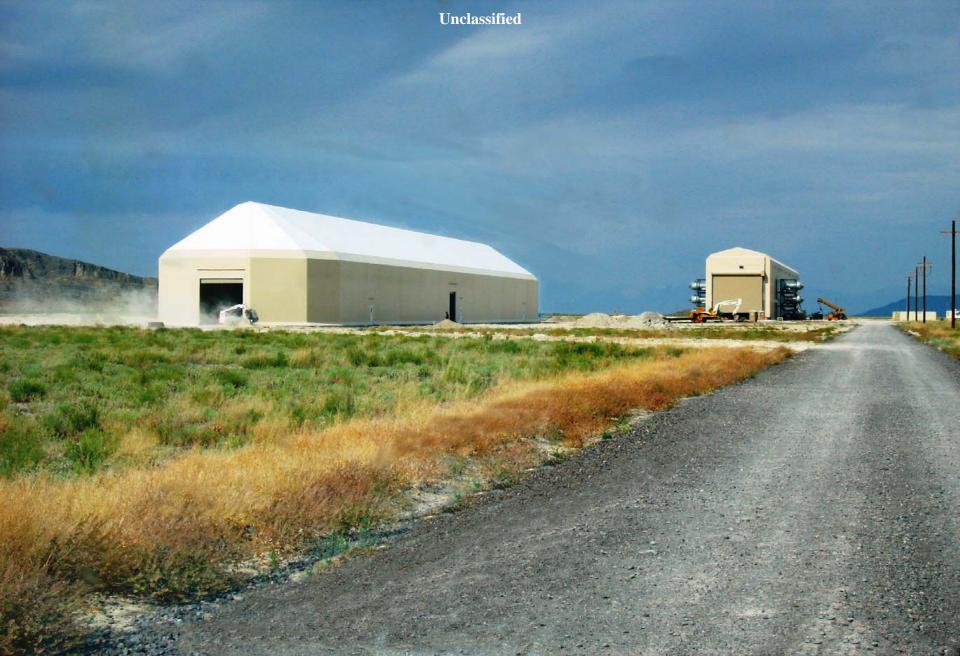
- Ensure Developmental and Operational testing is robust
  - Systems under test satisfy requirements
  - System supports mission success
  - Provide Decision Makers with the information they need to make Milestone and Fielding Decisions
- Ensure Warfighter gets right information to accomplish mission
  - Evaluation report should clearly state limitations and impact to employment in the field

Value of testing to Warfighter = Demonstrated Mission Success in Operationally Realistic Setting





# Backup



Active Standoff Chamber (ASC) and Joint Ambient Breeze Tunnel (JABT)

Unclassified

22



**JABT Exterior** 



**JABT Interior** 

Test & Evaluation Office

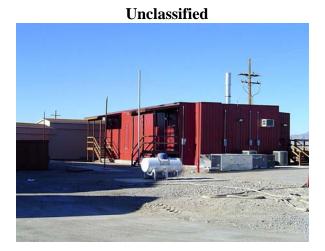


**ASC Exterior** 

Test & Evaluation Office









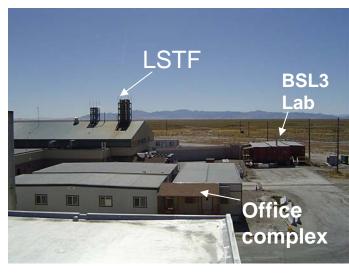
**JBAIDS Test Support Trailers** 

BSL3 Lab

JBAIDS BLS2 Lab

### Work load is expanding faster than facilities







Offices for 45 personnel

Field Support Trailer

# JOINT PROJECT MANAGER GUARDIAN



Briefing to Joint CBRN Conference June 24-27 2008

Vigilant Protection and Initial Response for DoD's Critical Infrastructure

COL Mark Malatesta Joint Project Office Guardian mark.malatesta@jpeocbd.osd.mil

# THE GUARDIAN VISION IMPROVING TODAY TO SHAPE THE FUTURE

#### **PRINCIPLES**

Systems of Systems View Task Force Approach Joint Basing Concept Disparate Approaches Network/Fusion Robotics

> MILITARY Dod Installation Protection

> > & RESPONSE

JOINT Experiment

Inter PM Demonstrations
Conventional/Non-Conventional
Disparate Sensor Integration
Robotics Demonstrations
DSS-PMC Integration

**FY07** 

Global Information Grid
Reachback Response Enhances
Mil-Civ Interoperability

ntegrated CBRN, Physical Security

CIVIL SUPPORT TEAMS

LAVERED PROTECTION

**FY08** 

JOINT CONCEPT
TECHNOLOGY DEMONSTRATION

Inter PM Experimentation
CBRN/Force Protection Solution Sets
Toxic Industrial Chemical Threat Defense

Seaport Of Debarkation

Forward
Operating

**FY09** 

**COLLABORATIVE DEMONSTRATIONS** 

DoD & DHS Information System Upgrades Interoperability LAB LOE **STRATEGIES** 

Nested to MDAP Program
Common DSS Architecture
Common COTS Suite
Interoperability of
Standard Items
Detect to Protect

Airport Of Debarkation

FY10-15

INTEGRATED JFPASS CAPABILITIES

Transition to Joint Programs of Record Spiral Acquisitions CARLS UCS P3I Sensor Integration

From Foxhole to Fort across to the Civilian Community

OMMAND & CONTROL DECISION SUPPORT

MOTION SENSOR

# Bringing Homeland Security & Defense Together

Department of Homeland Security Homeland Security Presidential Directives
National Security Strategy

National Response Plan

Department of Defense (DoD)

SOUTH AND SECURITY OF THE PARTY OF THE PARTY

Installation Protection Steering Group
NORTHCOM Force Protection Working Group/J34
Integrated Unit Base Installation Protection (IUBIP) CBA

- National Incident Management System
- All Hazards
- BioWatch
- Grant Programs



- Instructions
- Directives

STATES OF

- Homeland Defense Strategy
- Anti Terrorism/ Force
   Protection Policy
- All Hazards

Draft DODI XX IEM

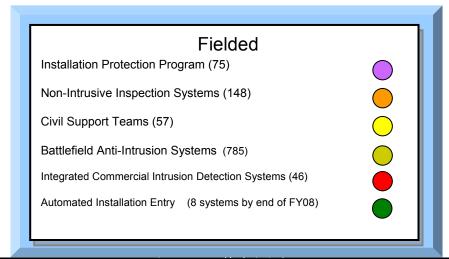
Integration of Policy, Guidance and Capability Solutions





## JPMG Portfolio and Fieldings



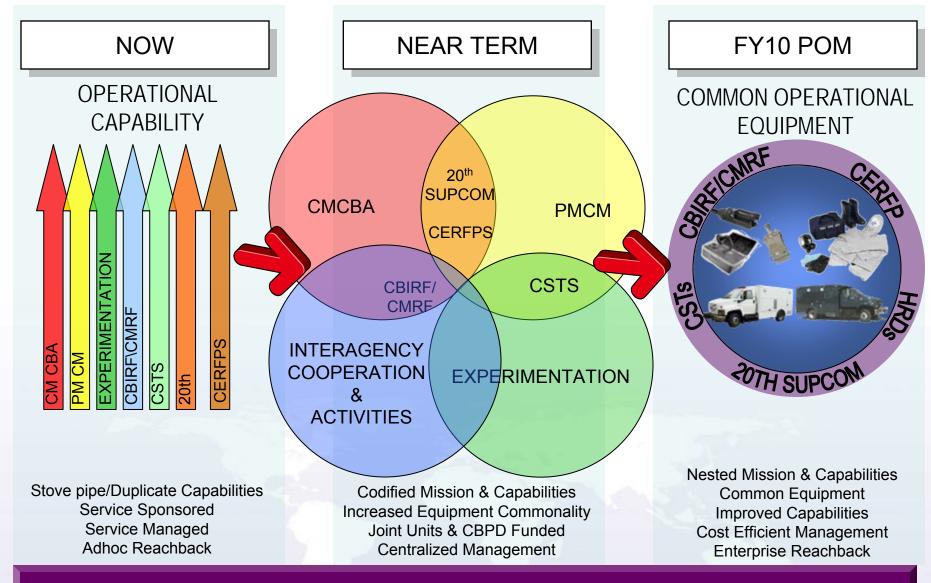


# From Fort to Foxhole United States Spain Afghanistan Okinawa Okinawa Okinawa

#### Worldwide



# **Consequence Management Objective**







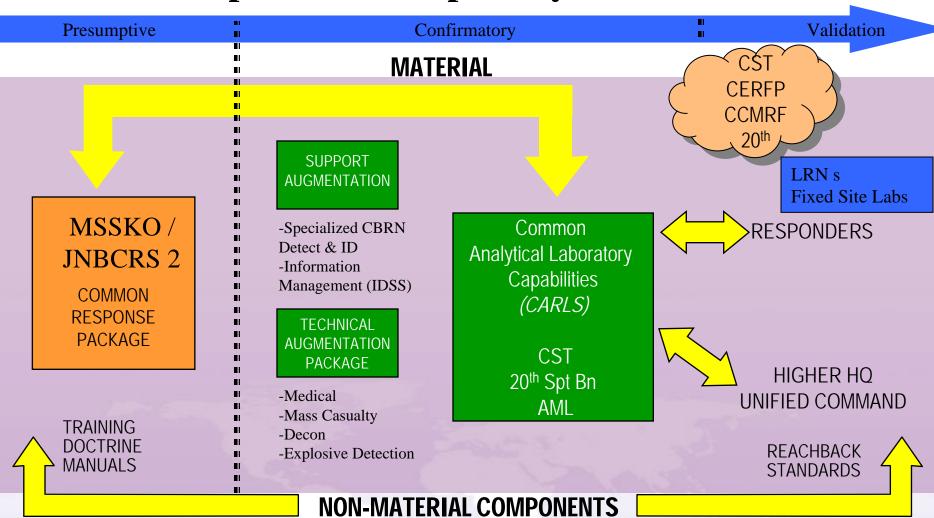
# **Consequence Management**

Fielding improved Analytical and Incident Management capabilities to NGB / CSTs	<b></b>	<ul> <li>Expanded TIC/TIM detection capability</li> <li>Broader range of sample matrixes</li> <li>Improved communication capabilities including secure video, satellite communications, and secure VTC</li> </ul>	
Equipping and Fielding 20 <sup>th</sup> Support Command WMD CE, TEU, Nuclear Disarmament Teams, and Mobile Laboratories	<b>→</b>	<ul> <li>Provided 20<sup>th</sup> with advanced mobile Chemical, Biological, Radiological and Explosive identification capability for short-term and extended missions, supporting DHS and contingency operations</li> </ul>	
Fielded 81 Chemical / Biological Incident Response trailers to the U.S. Army Reserve Reconnaissance / Decontamination Platoons	<b>→</b>	<ul> <li>Providing rapid deployability for Army Reserves to support civilian authorities in response to a CBRN event</li> </ul>	





# **Specialized CM Units Operational Capability Construct**







## **Common Analytical Response Laboratory System (CARLS)**

- Modular, Mission-Driven Material Solution For Mobile Lab Analysis
- Supports CSTs, 20th SUPCOM, other service response units, and **Service Medical Laboratories**

#### **Key Capabilities**

- Information Management Provides a Net Centric Approach with Common Information Backbone for reachback to subject matter experts
- Automation Decreases Required Skill Set For Sample Handling & Integrates Data Fusion and Decision Support
- Common Analytical Capabilities Across Portfolio Increases Confidence, Sampling Capability, and Supports Homeland Defense & Forward Deployed Chemical, Biological, Radiological and HY Explosive Detection Equipment
- Modular Approach
  - Analytical equipment
  - Analytical processes
  - Personnel staffing
  - Expandable laboratory design

Provide A Common Solution To Accommodate All Missions





## **COTS Life Cycle Management Process**

#### Issue:

- •Incomplete Life-Cycle Management and Institutionalization
- Disparate Levels of Capability Across DOTMLPF
- •Suspect Fiscal Profiles for Technology Refreshment
- •Dispersed, Fragmented and inconsistent Product Data

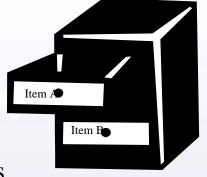
# CBRN Knowledge System

#### DOTMLPF - PG **Training Packages** Test Data Technical Data Vendor Support Warranty Data

\$1.5M Investment

#### Solution:

- •Single Point of Management
- Portfolio Approach
- •An End to End Enterprise Process
- Single Repository of Product Information
- •Sustainment functions incorporated in to key Service Institutions



380 items / \$270M of Fielded Capability

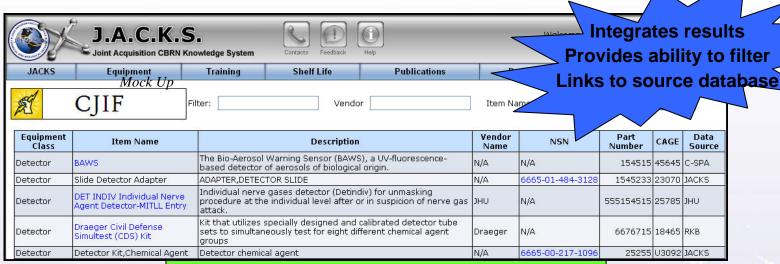




# **COTS Data Management**

### **COTS-JACKS Info Fusion (CJIF)**

- Provides users with access to multiple responder equipment data bases, simplifying information gathering and analysis requirements
  - Provides a single, multiple word search across multiple data sources and domains
  - Displays integrated DOTMLPF results
  - Provides the ability to drill down into assessments
  - Establishes a sustainment data base
- Supports improved decision making and investment strategies
- Provides access to shared data to enhance Mil Civ interface and interoperability
- Automated data sharing between JPEO, ECBC, and DHS FEMA
- Ensures a portfolio approach and community buy-in with the introduction of the COTS IPT and Working Groups







# **COTS Life Cycle Management Process**

Institutionalized COTS initial/sustainment training with the USACMLS	<b></b>	<ul> <li>Provides more consistent and accurate training products</li> </ul>
Established a single Life cycle Management Center (RI) for COTS components	<b></b>	<ul> <li>Provides improved asset visibility, reduced sustainment costs and improved response</li> <li>Improved understanding of TOC and projection of obsolescence</li> </ul>
Incorporated high density COTS into Portfolio, Integrating the high density commercial technologies into the sustainment process. Ahura / Cobra / Drash / multiRae		<ul> <li>Provides user community with validated system performance, consistent training products, and timely sustainment support</li> <li>Negotiated reduced investment and sustainment costs</li> <li>Improved interoperability across user groups</li> <li>Ahura quick look; resulted in recommendation to institutionalize; identified gaps; created support tasks and new lesson plans; updates to PME course and Dismounted Recon Course</li> <li>Cobra quick look; recommendation to institutionalize; created new lesson plan</li> <li>Drash quick look resulted in creating new lesson plans updating the Mass Causality Decon Course</li> <li>MultiRae quick look resulted in new lesson plans updating the CSSC, CST and Dismounted Recon Courses</li> </ul>



## **TICPDE**

#### Past TIC/PDE

- A 2003 CENTCOM UNS effort, supported in an adhoc manner
- 16 Sets in Afghanistan (2) and Iraq (14) comprised of approximately 150 high demand CBRN items.

#### Present TIC/PDE

- Currently working with the USACMLS to institutionalize TICPDE training
- Equipment and training will be supplementing the Chemical School CBRN First Responder Course
- Refreshed Capability
  - TVI Decon Shower
  - SCBA
  - Suits
  - Detector, Chemical, HAZMAT ID
  - Detection, Instrument, MultiRAE Plus
  - Sampling Kit, Combat, Quicksilver
  - Cart, Multi-Purpose
- All sets updated with Pocket Reference and Decision support

150 pieces of equipment

- Detection
- Identification
- Protection
- Surveillance



Community effort

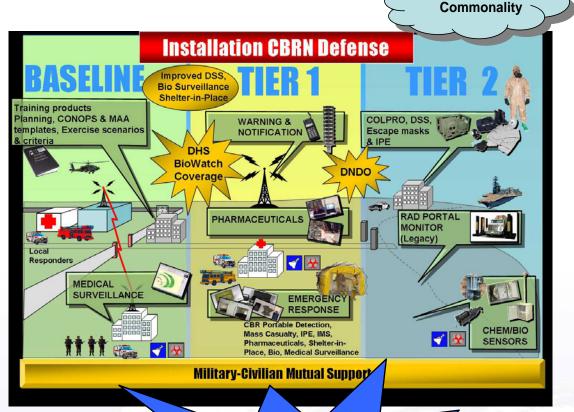
made it happen





# **CBRN IPP Tiered Program**

75% Joint



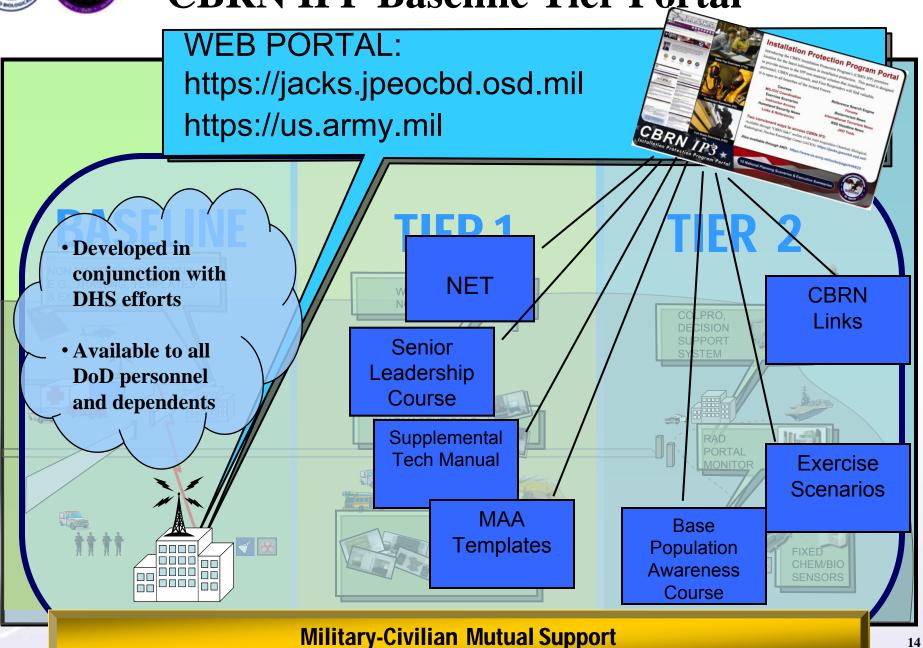
**1,705** classes 5,638 classroom hours 20,054 students 175 separate exercises 1,195 pallets deployed

- 75 Bases fielded (CONUS/OCONUS)
- Activated the IPP web portal providing CBRN IPP information and instructional material
- Provides enhanced biological detection capability:
  - •Portable detection capability on tier 1 installations
  - •Fixed capabilities on tier 2
  - •Incorporates BioWatch surveillance capabilities (where available)
- Installation decision making capabilities and interoperability
- Expanded mil-civ partnerships within federal agencies and at local jurisdictions in program exercises
  - •5 Joint TTX's conducted / 14 scheduled
  - Incorporating BioWatch CONOPS into the **IPP** Baseline Tier
- Improved policy guidance and standards thru a new Emergency Management DoD Instruction





**CBRN IPP Baseline Tier Portal** 



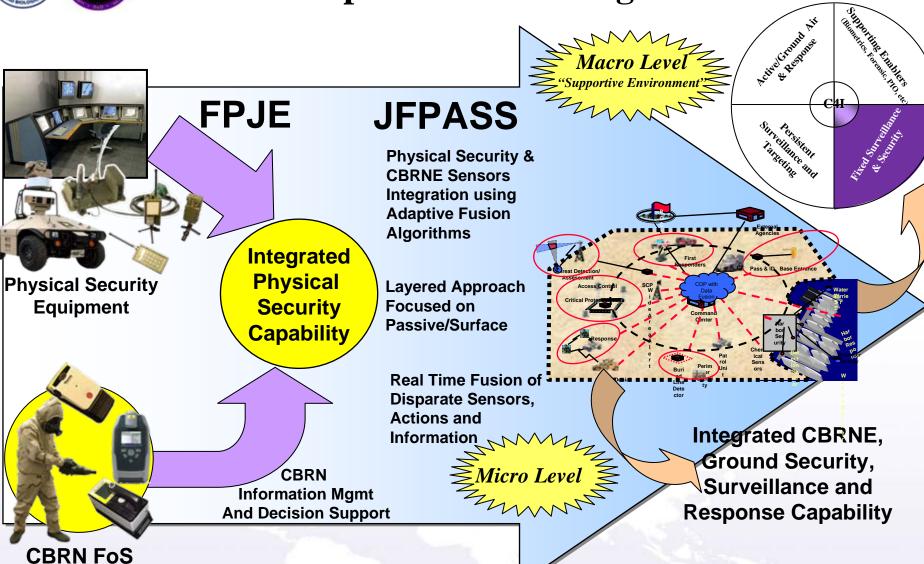


## JPMG/BioWatch Cooperation

- Facilitate introduction between local BioWatch and Installation POCs
- Coordinated and facilitated local involvement in CBRN IPP Table Top Exercises, Functional Exercises, and Full Scale Exercises
- Demonstration Project with ASAP Collectors
- Working as a part of an OSD (HD) team to leverage an integrated Installation Protection Capability that improves the National Detection and Response capability





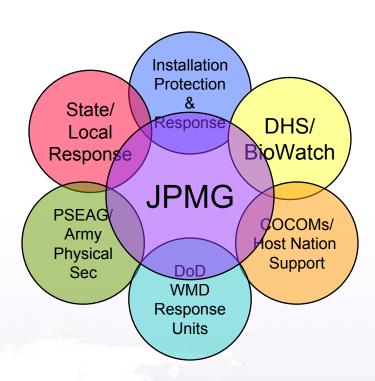


Integration of disparate systems into an enterprise solution reflecting a synergistic merging of capabilities to support an expanded mission space



## **Summary**

- Delivering CBRN and Consequence Management capabilities today, integrated with appropriate policy and guidance
- Integrating a total DOTLMPF
   COTS/GOTS approach into a portfolio
   protection and response capability
- Engaged in increasing partnerships with DHS to improve interoperability and response integration

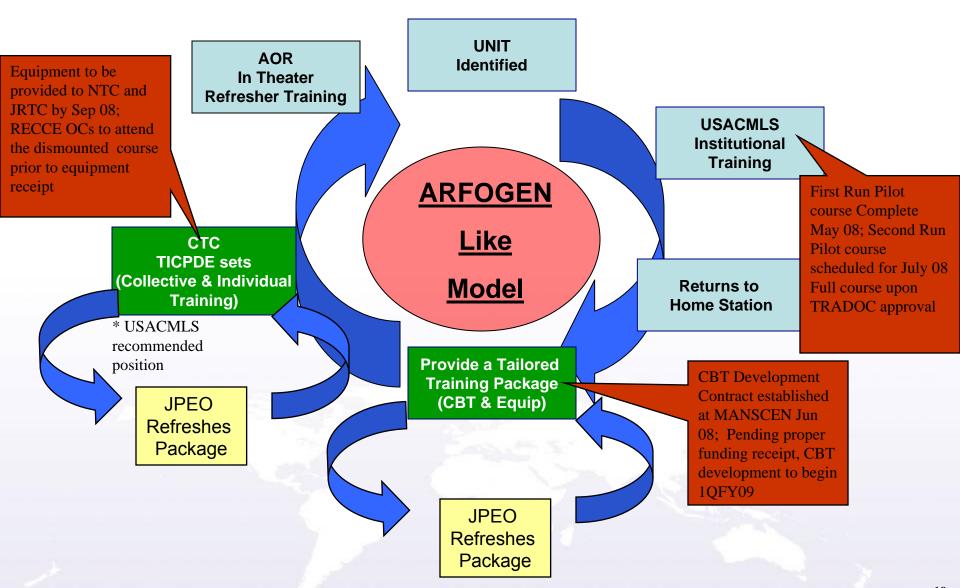








# Institutionalizing TICPDE for the Warfighter



# Developing Capabilities to Combat Weapons of Mass Destruction

Dr. G. Peter Nanos, Jr. Associate Director, Research & Development

NDIA Joint CBRN Defense Conference June 26, 2008

Distribution A: Approved for Public Release; distribution is unlimited

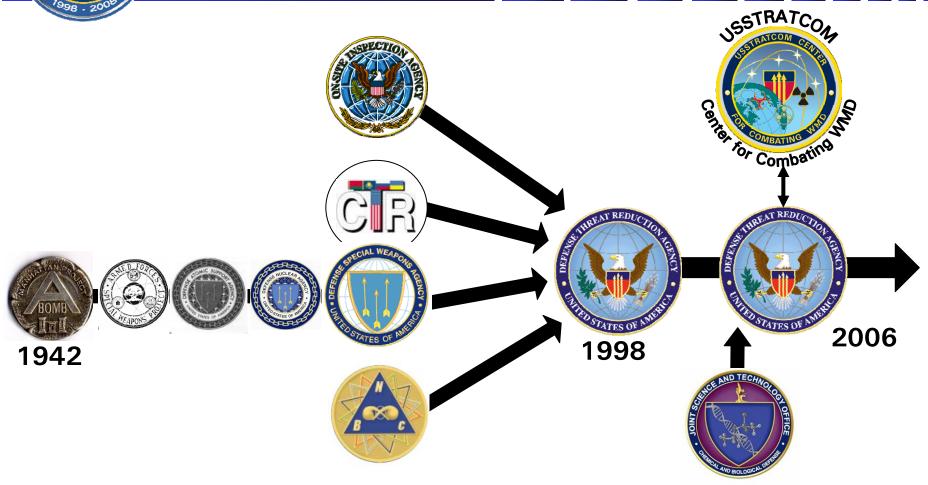




- DTRA Past & Present
- DTRA's Mission and Organization
- DTRA's Campaigns
- Support to the Combatant Commands
  - USSTRATCOM Combating WMD Center
  - Joint Elimination Coordination Element
- Grand Challenges for the Future



# Defense Threat Reduction Agency Transforming for 21<sup>st</sup> Century Threats





# Responding to 21<sup>st</sup> Century Threats

"The growing spread of weapons of mass destruction provides small groups of individuals with the ability to deliver devastating harm to the United States." - Defense Science Board, May 2007 (2005 Summer Study on Reducing Vulnerabilities to Weapons of Mass Destruction)

"That's the thing that keeps me up at night....that there are terrorist organizations like al-Qaida actively seeking weapons of mass destruction, and there is no doubt in my mind that if they get one, they will use it against a developed society." - General George Casey, US Army Chief of Staff, December 18, 2007, Addressing State of the Army, Stars and Stripes Magazine





National Guard Exercise

– CBRN attack



Multiple Nuclear Explosions



Aging and Dangerous WMD Stockpiles



## **DTRA** has a Critical Mission

•To safeguard the United States and its allies from weapons of mass destruction (chemical, biological, radiological, nuclear and high-yield explosives) by providing capabilities to reduce, eliminate and counter the threat and mitigate its effects



Chemical Weapon Elimination Site, Albania



International
Counterproliferation Program
Integrated Exercise,
Armenia, October 06



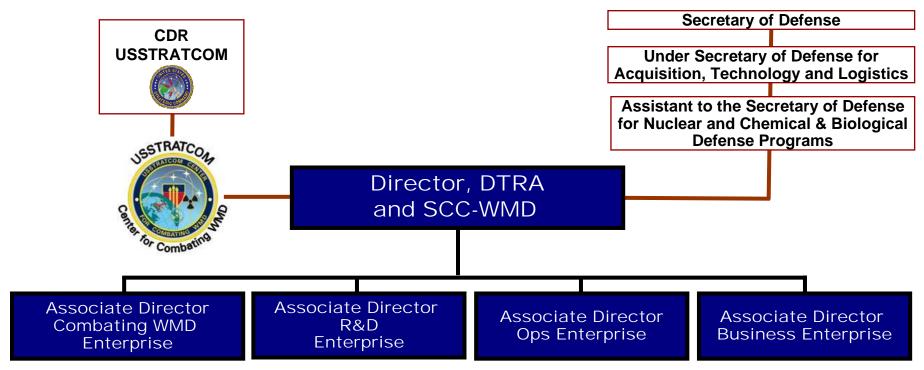
Arms Control Inspections



Hard and Deeply Buried Target Defeat



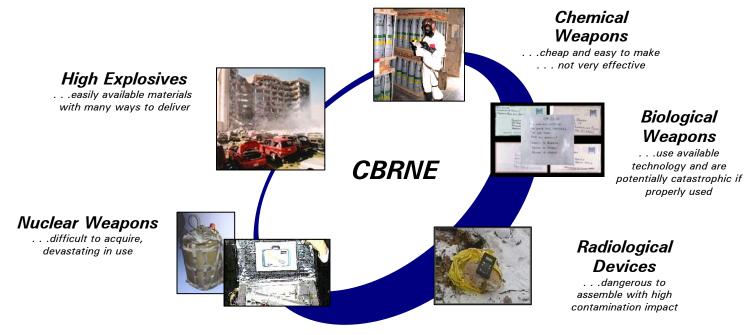
# **Organization and Relationships**





# **RD Enterprise Mission**

 Identify, conduct, and deliver innovative science and technology, through systematic, risk-balanced processes, that enable America to combat Weapons of Mass Destruction. Our system engineering activities provide for research, development, and acquisition to support the needs of Combatant Commanders, Services and DTRA





# **RD Enterprise Portfolios**

# Nuclear Technologies RD-NT

 Mission: Research, develop and demonstrate technologies and capabilities to mitigate the threat and/or effects of nuclear and radiological events; and to enhance the safety, security, survivability, and performance of U.S. nuclear assets and facilities

Nuclear Forensics
Ground Sample Collection ATD



# Counter WMD Technologies RD-CX

 Mission: Research, develop and demonstrate innovative technologies and capabilities to actively counter the full spectrum of CBRNE threats

Combating Terrorism Prevention of Structural Collapse



## Chem/Bio Technologies RD-CB

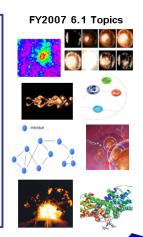
 Mission: Manage and integrate the development, demonstration, and transition of timely and effective chemical and biological defense solutions for the Department of Defense, while serving as the focal point for science and technology expertise



Diagnostics

# Basic and Applied Sciences RD-BA

- Mission: To foster and enable farsighted, high payoff research to reduce, eliminate, counter and mitigate the effects of weapons of mass destruction (WMD) by:
  - Advancing fundamental knowledge and understanding in the sciences
  - 2. Utilizing best practices in systems engineering





# **Technology Innovation**

RD Innovation Office - Advance a work environment that creates new ideas, concepts and capabilities to solve hard problems for the **Combating WMD mission** 

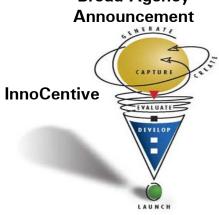
International Collaboration



**Small Business Innovation Program** 



**Broad Agency** 







**Discovery of Innovative Technologies and Capabilities** 











**Novel Counter IED Tools** 

State-of-the-art Technology

**Pixel Interrogation** Hunter / Gatherer of Ideas

**Chemical Detection** Badge

Market Research



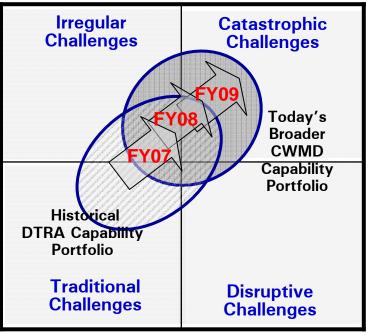
# **Top Challenges and Program Areas**

The complexity and evolution of the threat demands that we change our investment to meet the most pressing challenges









Evolution of R&D Efforts

Transformational Goal - Reduce
the time to close capability gaps

## **Top Program Areas**

- Technology Innovation
- Deployable Technical Intelligence Laboratory
- Nuclear Forensics
- Nuclear Survivability
- Hard & Deeply Buried Targets
- Advanced Energetics for Weapons
- WMD Threat Research and Analysis Collaboration (WTRAC)
- Chem/Bio Applied Technology Dev
- Transformational Medical Technologies Initiative
- Basic Research Engagement





# Concept

## Deployable Technical Intelligence Laboratory

## Modular

Adaptable to meet requirements

## Mobile

- Rapid deployment
- At-the-ready set up

## Self Contained

- Generator power
- Climate control
- Outfitted with ruggedized state of the art equipment

## Multifunctional

- Administration
- Electronics
- Analysis
- Satellite communications







## State and Local Forensic Challenges

- National Emergency Response (9/11)
- Catastrophic events, WMD or natural disasters (Katrina)
  - Resources burdened beyond capabilities
  - Supplementing functional laboratories to reduce backlog













## DOD-DOJ Partnership

## **NIJ Mobile Forensic Laboratory**

- Developing a readily deployable forensic laboratory
- Examining, identifying, comparing and storing evidence
- Linking suspect, victim, and crime scene through analysis of physical evidence
- Supporting existing forensic operations in the aftermath of a catastrophic event







## **Communications**

Interoperable secure communications capability with a national support infrastructure, including national databases, virtual experts and others within the criminal justice community





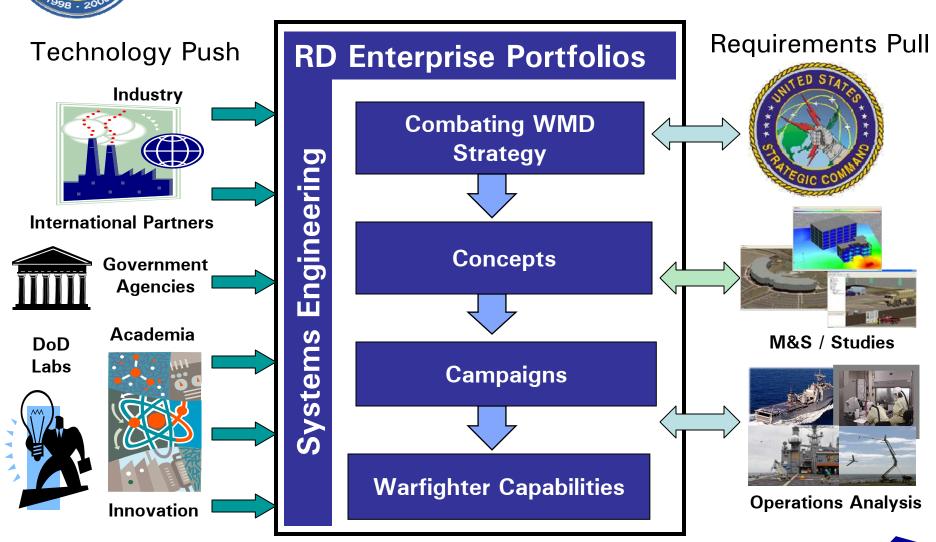








# **R&D** Coordination and Integration





# DTRA Campaigns: Agency-wide projects to provide enhanced capabilities

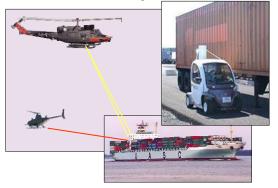
#### Situational Awareness



Control WMD Materials and Systems Worldwide



Defeating the Threat of Lost or Stolen (Loose) Nuclear Weapons

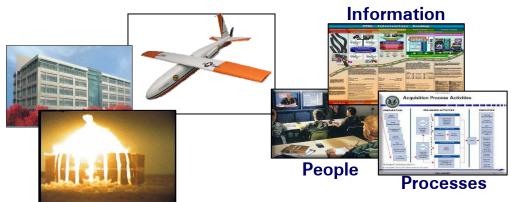




Eliminate WMD as a Threat to the Warfighter



Protect the Homeland from WMD



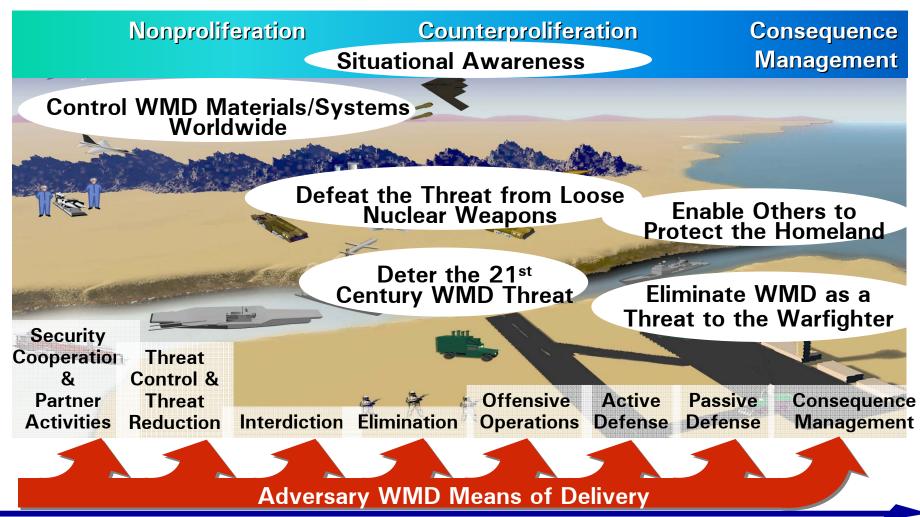
Transforming the Deterrent

**Business Excellence** 





# Campaigns Provide an Integrated Approach to Combating WMD





## **SCC-WMD: Plans for Mission Success**

- Deter and prevent the acquisition, development or use of WMD, associated technology and related material
- Leverage around-the-clock situational awareness of worldwide WMD and related activities
- Plan, advocate and advise combatant commands on WMD related matters
- Provide critical reachback and resources to USSTRATCOM and combatant commands





- A net-centric tool designed to support the WMD warfighter
- Built on a service-oriented architecture using web services to share data, available via standard SIPR terminal without client footprint
- Incorporates a geo-spatial viewer providing common operating picture-like views
- Operational Reachback



# Joint Elimination Coordination Element (JECE)

- JECE responds to 2006 QDR task to establish a deployable JTF headquarters for WMD elimination
  - Expands capabilities to enable it to serve as a JTF-E HQ
  - Provides immediate command and control for forces executing WMD elimination missions
- JECE also brings joint planning capability and training & exercise capability for WMD elimination mission



- Joint Staff manpower validation
- Ongoing combating WMD mission support to CENTCOM
- Future plans
  - Co-locate JECE with CBRNE support element
  - USJFCOM is establishing authority for Joint Task Force -Elimination





## **Grand Challenges for the Future**

- Today's challenge how does DoD support the search for and neutralization of a loose nuclear weapon in a U.S. city?
  - Investments in nuclear forensics and detection technologies
  - Creation of a National Weapons Effects Federation
- Tomorrow's challenge given advances in biological sciences and the global economy, how does DoD support the deterrence and defeat of biological terrorism?
  - Investments in continuing biological science excellence
  - Expanding arms control efforts into biological threat reduction



# Making the World Safer...





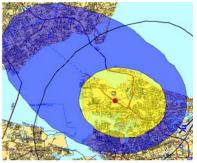












...by combating weapons of mass destruction





Sustaining a Competitive Advantage For the Chemical and Biological Defense Program (CBDP)

CBRN Conference • 26 June 2008



# Chemical and Biological Defense Program

- Established by Congress in 1994, re-organized in 2003
- Consolidated all Department of Defense (DoD) chemical and biological (CB) defense efforts into defense-wide funding accounts overseen by a single office —Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs (ATSD(NCB))— within the Office of the Secretary of Defense
- Vision: to ensure DoD operations are unconstrained by chemical, biological, radiological, and nuclear (CBRN) effects
- Mission: to provide CBRN defense capabilities in support of the National Military Strategies

Realizing the vision and mission of the CBDP will ensure we sustain our competitive advantage



## State of the Union

- Complex set of actions within CBDP that demand resources and time
- Work to hold current operational risk constant and reduce risk associated with future potentially catastrophic CBRN threats
- Program for the near- and mid-term (FY 2010 to 2015) to:
  - Improve CBRN defense preparedness
  - Reduce risk to the Warfighter
  - Field proper mix of capabilities to enable military operations
  - Prepare to meet the future threat.
- Continuous examination to improve process of identifying, prioritizing, and resourcing capabilities-based requirements of the 21st Century
- Establish goals beyond current programming activities (10 to 15 years) to drive transformational actions

# Agenda



- Introduction
- Threat
- Action
- Methodology
- Overcoming Challenges
- Accomplishments
- CBDP Strategy
- Future Vision
- Measures of Success



### **Global Security Environment**

### **Threat**

- Pervasive
- All types of conflict
- Every possible region
- Asymmetric (seeks weapons of mass destruction (WMD))
- Adaptive

Nation is at War: Maintain homeland defense and security

### **Major Challenges**

- Traditional
- Irregular
- Catastrophic
- Disruptive

### **Multitude of Stakeholders**

- Joint
- Interagency
- International

Failure to address this environment with the right mix of CBRN capabilities will increase risk to sustaining the nation's competitive advantage

# FINANCE OF THE PARTY OF THE PAR

### **Chemical Threats**

### **Traditional Threats**

- Traditional chemical warfare threats (nerve, blood, and blister)
- Agents designed for military operations/ applications

#### **Enhanced Threats**

- Small levels of CBRN hazards, not necessarily weaponized, caused by a terrorist incident that may cause mass casualties
- Next generation agents

### **Emerging Threats**

- Nontraditional CBRN hazards
- Toxic industrial materials (TIM) hazards
- Toxic industrial chemicals (TIC)



#### **Advanced Threats**

- Unforeseen CB agent threats
- Asymmetric applications and/or engagements



### **Biological Threats**

### **Traditional Threats**

- Intracellular bacterial pathogens
  - Anthrax
  - Plague
  - Tularemia
- Viral hemorrhagic fevers
  - Ebola
  - Marburg
  - Junin

#### **Enhanced Threats**

- "Bioprospecting" to find particularly virulent strains in nature
- Cultivating particularly virulent strains of pathogens in the laboratory

### **Emerging Threats**

- Natural and emerging diseases:
  - Cholera
  - Pandemic flu
  - SARS
  - Drug-resistant TB
  - Malaria



#### **Advanced Threats**

- Adding, deleting, or mutating genes to engineer pathogens that are more resistant, transmissible, and virulent
- Creating viruses de novo



### The Warfighter:

Individuals from Active Forces, Reserve Components, governmental and departmental civilians, and contractors who participate in the growing range of worldwide military operations



### **Motive for Action**

The CBDP is shaped by the threat, funding, policy, and rapidly changing factors influenced by socio-economic, political, and environmental impacts:

- Planning for warfighting support to a new force-sizing construct, and maintaining capabilities and forces to wage multiple campaigns in an overlapping timeframe
- Continued proliferation in spite of Chemical Weapons Convention (CWC) and the Biological and Toxin Weapons Convention (BWC)
- The need for innovative, less costly technology approaches to support force modernization
- Growing strategic threats from state and non-state actors
- Expected identification of additional CBRN defense doctrine, organization, training, materiel, leadership and education, personnel and facilities (DOTMLPF) requirements
- A rapidly changing geopolitical environment





### **Our Methodology**

### Sustain the nation's competitive advantage by...

- Establishing an end-state for everything we do in the CBDP program with purpose driven stretch goals
- Using a deliberate Systems Engineering Approach (DoD 5000) to ensure integration
- Establishing the mindset and culture that seeks innovation at every step, and most importantly, rewards innovation
- Using existing processes (JCIDS) and seeking ways to continuously improve the way we do business and ensure jointness
- Seeking transformational capabilities over emerging threats

"Each Service brings to the fight unique and critical capabilities, but those capabilities are only as good as the contributions they make to the overall strategic effort. Nobody goes it alone today."

ADM Mike Mullen CJCS Guidance for 2007-2008











### **Integration Challenges**

- DOTMLPF integration across components, systems, and systems-of-systems
- Building strategies for necessary consensus
- Implementing efforts to realize potential
- Gaining joint efficiencies and effectiveness among:
  - Services
  - Interagency
  - International
  - Non-governmental organizations
  - Institutional
  - Infrastructure
- Employing the proper metrics that best show progress
- Conducting necessary CB safety and security measures





### Risk Challenges

### Must avoid increasing risk to the future Warfighter:

- Cannot fail to exploit and field technologies
- Must mitigate the risk of technological surprise
- Must facilitate efforts to create transformational capabilities
- Must address operational elements of sense, shape, shield, and sustain



### **Balancing risk may require:**

- Delaying developing and fielding of technologies to align science and technology (S&T) in support of advanced development efforts
- Accelerating development and fielding of capabilities to exploit opportunities
- Aligning resources to support test and evaluation (T&E) and training



### **Major Accomplishments**

- Installation Protection Program Integration
- DoD NTA Security Standards Baseline for HSC
- HR 109-452 Report (Catalyst for Doctrine, Training, Leadership and Education Integration)
- CBR MOU Roadmap (International Coordination)









### **Major Accomplishments**

- Executing Chemical Demilitarization Program Strategy
- Established DoD CBDP Strategies
- Established Transformational Medical Technologies Initiative (TMTI)









Mansformation of

### Provides innovative solutions to the Warfighter by:

- Developing broad-spectrum countermeasures and novel technology platforms (one drug, many bugs)
- Pursuing countermeasures targeting common disease pathways or enhance the host's immune system
- Integrating best efforts within government, academia, DoD, biotech industry, and small and large pharmaceutical corporations
- Providing seamless "end-to-end" product development
- Eliminating capability gaps by adding promising candidate technologies to the pipeline
- Using milestone-driven management to select the highestquality performers with the best value products aligned with the program mission





### **CBDP Initiatives**

Who: Warfighter focus/stakeholder relationships

What: Continuing innovation and importance of non-materiel solutions integration such as:

- Infrastructure MILCON Study
- Readiness Preparedness Study
- Jointness DTL&E Integration
- Policy CBDP Strategic Plan.

How: Continuing innovation at the policy level



### Why These Key Areas

- Future battlefield demands that the <u>Joint Force</u> have every possible advantage to enable success (force in being)
- Homeland Defense requires the "force in being" be fully prepared to execute any CBRN Defense role
- Correct mix of capabilities are necessary for a prepared defensive posture, first as a deterrent, and then as a response should deterrence fail
- Future emphasis must be on overall integration of system-of-systems with attention of field forces on two focus areas; the battlefield and the Homeland



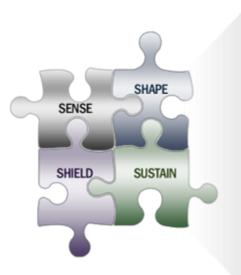
### **Improving Existing Processes**

- Conduct everything with the Warfighter in mind—there is no room for parochialism
- Address current and future force needs realistically
- Reach across intelligence and threat to know capability gaps
- Seek to integrate quickly, always forward looking
- Develop and sustain necessary checks and balances
- Monitor and validate progress



### **CBDP Goals**

- Operational Goal: Provide operational capabilities
- Future Goal: Define and develop future capabilities
- Institutional Goal: Sustain capabilities
- Management Goal: Improve management practices



#### **Operational Elements**

Joint Service Transportable Decon System
CB Protective Shelter
Joint Service General Purpose Mask
Joint Service Lightweight Integrated Suit Technology
Joint Vaccine Acquisition Program
Joint Biological Agent Identification and Diagnostic System
Antidote Treatment Nerve Agent Autoinjector
Joint Biological Point Detection System
Joint Effects Model
Joint Warning And Reporting Network
Joint Biological Standoff Detection System
Nuclear, Biological, and Chemical Reconnaissance Vehicle
Joint Chemical Agent Detector

Achieving a complex integrated system of systems requires our best efforts



# Operational Goal: Provide Operational Capabilities

Ensure Joint Forces are prepared to operate successfully within all Combatant Commanders' (COCOM) areas of responsibility in current CBRN threat environments:

- Support current global operations with leading edge capabilities
- Ensure operationally focused T&E
- Reinforce training, leadership and development, and education
- Execute acquisition programs
- Gauge CBRN defense preparedness





# Future Goal: Define and Develop Future Capabilities

Increase significantly our ability to dissuade, deter, defend against, and defeat any future adversary in any CBRN threat environment:

- Develop capabilities to maintain military advantage against future threats
- Define future CBRN defense human capital skills and competencies
- Sponsor innovative Joint experimentation
- Maintain robust S&T base: promote and exploit scientific discoveries





### **Institutional Goal: Sustain Capability**

### Sustain the capability of the Joint Force to operate jointly and provide an effective response in any CBRN environment:

- Upgrade facilities to enable DoD Transformation Goals
- Streamline decision processes and drive acquisition excellence
- Optimize resources



# Management Goal: Improve Management Practices

### Fulfill enterprise strategic roles and missions, meet the letter and intent of 50 United States Code (U.S.C.) 1522/23:

- Implement process, organization, and business transformation
- Perform international liaison
- Perform interagency liaison
- Implement a strategic plan
- Implement a strategic communication plan



### **CBDP** in the Next Five to Ten Years

To execute effectively for the next five to ten years, the CBDP depends on continued Leadership and Congressional support in three priority areas:

- Consistent resources for the overall program to ensure that, year after year, we are able to field improved defensive capabilities essential to ensuring our military can operate in any environment, unconstrained by CBRN threats
- Adequate funding for the TMTI to counter successfully future genetically engineered biological weapons and any newly emergent or bioengineered pathogen
- Adequate far-term investment in the research, development, testing, and evaluation (RDT&E) infrastructure to enhance our RDT&E capabilities, including the modernization and construction.



### **Our Measure of Success**

### Our Soldiers, Marines, Sailors, and Airmen continue to lead the world in CBRN defense capabilities:

- Obtain the necessary DOTMLPF integrated solutions for components, systems, and systems-of-systems
- Continue to develop new defensive capabilities in anticipation of the continued evolution of WMD threats
- Provide CBRN defense capabilities in support of the National Military Strategies
- Realize the vision to ensure that DoD operations are unconstrained by CBRN effects through that same integration.

Inherent responsibility of the CBDP Enterprise is to create a **Joint Force** with Warfighters better organized, trained, equipped, and resourced than in the past to deal with the WMD threat.



### **UNCLASSIFIED**

# Technology, Advanced Development and Convergence

PRESENTED TO: Joint CBRN Conference Ft. Leonard Wood, MO June 26, 2008 STEPHEN V. REEVES Major General, USA Joint Program Executive Officer for Chemical and Biological Defense (703) 681-9600



### What We Do

Support the Force

Improve Capabilities

Build the Future

**Current Operations** 

**Existing Capabilities** 

**Future Capabilities** 

**Mature/ Maturing Technology** 

**Emerging Science and Technology** 

### JOINT PROJECT MANAGERS

### CAPABILITY AREA PROGRAM OFFICERS



Col Daniel Berry (Air Force)



Falls Church, VA

COL Mark Malatesta (Army)



INDIVIDUAL PROTECTION

Quantico, VA

Mr. Will Hartzell (Marines)



INFORMATION SYSTEMS

San Diego, CA

Mr. Scott White (Navy)



NBC CONTAMINATION AVDIDANCE

Edgewood, MD

COL Kyle Burke (Army)



COLLECTIVE PROTECTION

Washington, DC

Mr. Stan Enatsky (Navy)



DECON

Quantico, VA

Mr. Rudy Olszyk (Marines)



CHEMICAL BIOLOGICAL MEDICAL SYSTEMS Frederick, MD



GUARDIAN

Mr. Ryan Madden







INFORMATION SYSTEMS

Mr. Chuck Fromer



CHEMICAL BIOLOGICAL MEDICAL SYSTEMS

Dr. Eric Moore



### Convergence





### **CBRN Portfolio of Systems**

### **Integrated & Robust CBRN System-of-Systems**

Warfighter Modeling & Simulation

Masks, Suits, Gloves, Boots

**Warning & Reporting** 

Protective Tents & Shelters

**Medical Treatment** 

Sensors

↓ ↓ atforms

Platforms

Diagnostic Systems **Decontamination Systems** 

**Enabling Logistics & Information Systems** 

Attack

Service and Joint C2 Systems

Reaction

Decision(s)

**Sustained Operations** 

Post Operations

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Intelligence

Vaccines &

Prophylaxis



### **CBRN Convergence**

### **Net-Centric**

Joint Interoperability

Plug 'n Play

Adaptable

Flexible

Intelligence

Vaccines & Prophylaxis Synchronized Across Portfolio

Testable

Carefully Linked with External Systems and Communities

#### Integrated & Robust CBRN System-of-Systems

Warfighter Modeling & Simulation

Masks, suits, gloves, boots

Warning & Reporting

Protective Tents & Shelters

Medical Treatment

Sensors

Joint Service Integration

Platforms

Diagnostic Systems

Attack

**Decontamination Systems** 

**Enabling Logistics & Information Systems** 

Service and Joint C2 Systems

Reaction

Decision(s)

**Sustained Operations** 

Post Operations

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# Convergence in Requirements – Technology Driven

- Stand-off Detection
  - Chemical / Biological
  - Fix / Mobile
- Point Detection
  - Chemical / Biological
  - Common Bio Modules
- Information Technologies
  - Bio Informatics
  - Warning, Reporting, Analysis

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### **Convergence In Requirements**

- Policy / Operationally Driven
  - Civil-Military Integration
  - Common Standards / Interoperability
    - Medical Systems / Pharmaceuticals
    - Detection
    - Protection
    - Information Systems
    - Identification / Analysis
  - "All Hazards" Protection, Detection, Analysis
  - Agile, Mobile, Lighter Forces
  - Major Combat Platform Requirements for CBRN Defenses



### Major Defense Acquisition Program (MDAP) Chemical/ Biological Defense Program Support



Working with 17 MDAPS to Date

### CBRN — REQUIREMENTS

CBR Detection
Battle Management
Integrated Early Warning
Collective Protection

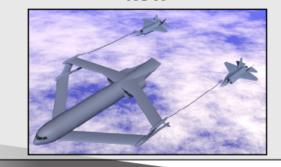
Decontamination Individual Protection

# OTHERS JMAC, JLTV, MRAP UNCLASSIFIED

### **Expeditionary Fighting Vehicle**



KC-X



### Joint Strike Fighter



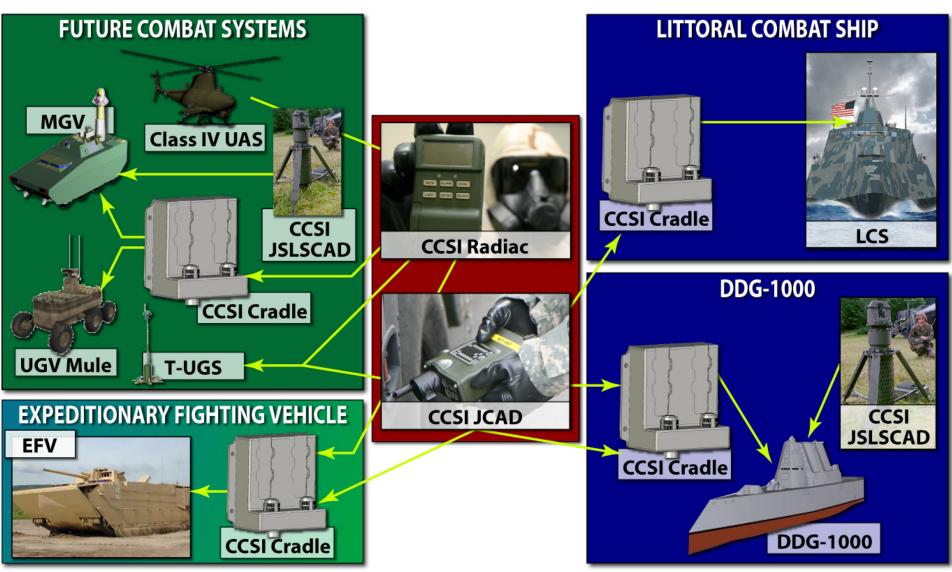
### **FUTURE COMBAT SYSTEMS**



080626\_JCBRN\_Conference\_Reeves



### **CCSI Being Integrated Into MDAP Platforms**





### **Common CBRN Sensor Interface (CCSI)**

- JPEO-CBD Standard for Sensor Physical and Electronic Interfaces
  - Component Interconnects,
     Power, External Connectors
  - XML Communications, Standard Basic Command Set, Modularity

- Enables Modularity, Integration and Net Centricity
  - Interchangeable Sensor
     Components (Power, Comms,...)
  - Host Platform Can Identify and Communicate with Any CCSI Sensor Using Common Commands and Reports

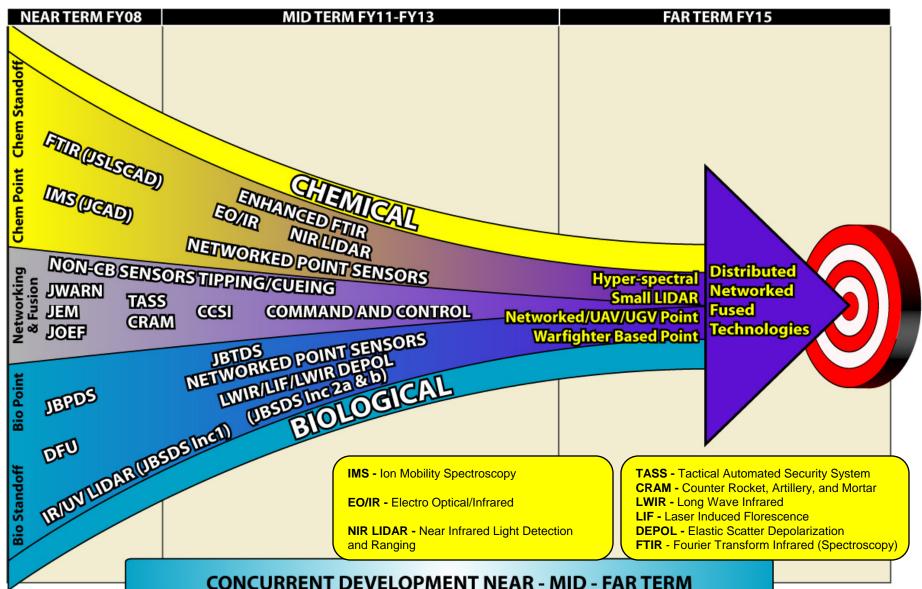
- Status
  - JPEO-CBD CCSI Standard Released February 15, 2008
  - CCSI Standard Posted on JPEO-CBD Web Site
  - Draft Physical Standards Being Validated
  - Evaluating Aligning with Industry Standards Underway

Version 1.0 is Ready for Use

12



### **Chem-Bio Stand-Off Detection**





### Biological Systems Convergence – Detection/Medical





Air Dry Filter Unit (DFU)

National Guard Bureau (NGB)/Analytical Laboratory System (ALS/Individual Protection (IP)



Joint Biological Point Detection System (JBPDS) / Joint Portal Shield (JPS)





Air

Joint Biological Tactical Detection System (JBTDS)





Blood Urine Sputum

Joint Biological Agent Identification & Diagnostic System (JBAIDS)

Other Stakeholders (e.g. DHS, USPS, USDA Foreign, Test labs)



Common Identifier

Horizontal Technology
Integration
UNCLASSIFIED





Water

Joint Chemical/Biological Agent Water Monitor (JCBAWM)





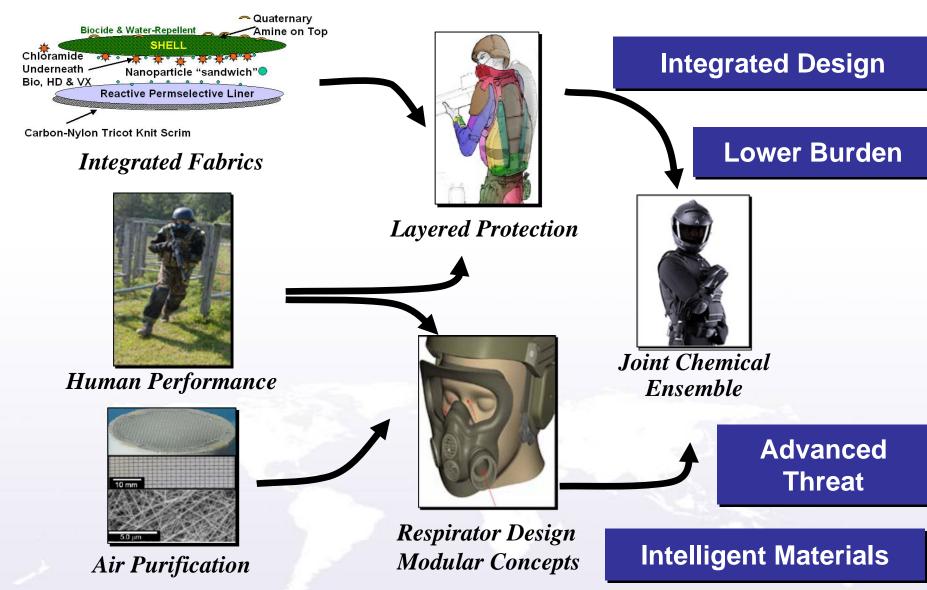
Surface Air

JPEO QA Labs

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## Individual CBRN Protection Vision: Integrating Nano and Bio Technologies



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### **Collective Protection**



### **Cross-Platform Applications**



#### **Decontamination**

#### CB Contamination Indicators

(Base Decon Selection on Agent Present; Only Clean Where/ When Needed)

## Decontamination Indicators

(Verify Decontamination is Complete)

#### **Protection**

(Self-Decontaminating Coatings, Removable Coatings, Protective Coatings) Decontamination System of Systems

#### DARPA-TACTIC

(Threat Agent Cloud Tactical Intercept and Countermeasure)

#### **Applicator Type**

(Vary in Sizes Based on Mission; Compatible with all Decontaminants)

#### Dynamic Trade Space in Field

(Adjust Decontaminant Requirements Based on Mission Specifics)

#### **Decon System of Systems**

Sustained

Combat Power

ntegrated

Medical

Capability •



#### **Medical System Integration**



Doses

**Symptoms** 

Agent **Delivery**  Doses on Target\*

**Downwind Absorbed** Dispersa



**Medical Pretreatment** 

Medical

Surveillance

**Medical Diagnostics** 

Medical **Therapeutics** 

Transformational **Medical Technology Initiative** 

**Bioinformatics** 

**Broad Spectrum Therapeutics** 

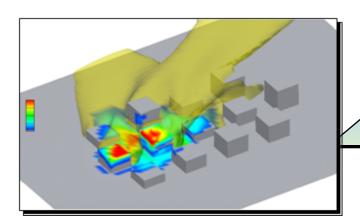
Rapid, **Large-Scale Production** 

**Integrated System Using Revolutionary Technologies** Transparent to the User



#### Joint CBRN Integrated Information System

#### **Awareness**



**Joint Effects Model (JEM)** 



Joint Warning and Reporting Network (JWARN)

Strategic

**Operational** 

Tactical

Sensors



**Information Systems Interoperability** 



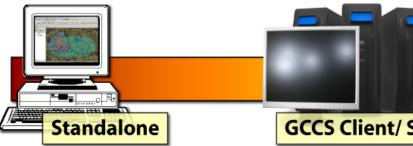
Joint Operational Effects Federation (JOEF)

**CBRN Data Services on Service-Oriented Architecture** 



#### **CBRN Information Systems:** The "Systems Integration" Challenge

**FUTURE PAST** 







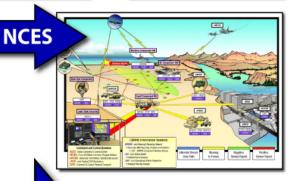
**GCCS Client/ Server** 

**Web-Enabled NECC** 

JCID-on-a-Chip









**JEM INC 1 JWARN INC 1 JOEF INC 1** 

T. VAAW

**JEM INC 2 JWARN INC 2 JOEF INC 2** 

**JEM INC3 JWARN INC 3 JOEF INC 3** 

T.E NAAW

Integrated **Net-Enabled Web-Based Apps** XML Data Exchange The Network is the PC

New Technology Drives New Software Delivering **Greater Capabilities** to the Warfighter

1.5 NAAW

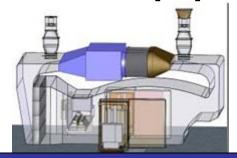




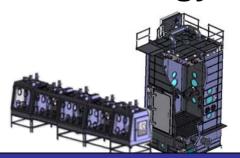
Focal Point for Commercial Off-The-Shelf Equipment



## T&E Convergence: Product Director Test Equipment, Strategy, and Support (PDTESS)



Whole System Live Agent Test FY09-FY11



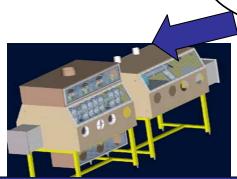
Non-traditional Agent Test Facility FY08-FY11



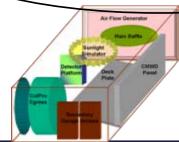
Backgrounds and Interferents FY12



Biological Stand-off Facility FY10-14



Chemical Biological Equipment,
Point Detection, Stand-off Detection,
Individual Protection, Collective
Protection



Shipboard Simulator and Chamber FY12-FY15

Non-traditional Agent
Individual Protection
Ensemble Mannequin System
FY14-FY15

Unit Mission Model FY12-FY14

Chemical Biological Agent Resistance Test FY09-FY10

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#### **Investment Convergence**

**DHS S&T** 

#### JOINT EFFORTS

Sample Collection (Validated Sampling WG)

**Public Health Actionable Assays** 

**Inexpensive Bio-Sampler** (LBADS)

#### **LEVERAGING OPPORTUNITIES**

**Automated Point Detection** Test and Evaluation (T&E) **Chemical Detection** 

**Sample Preparation** 

Stand-Off Detection

**JPEO** 



**Bio-Point Detection** 

**Decontamination** 

**Chem Point** 

Standoff

**Sample Preparation** 

Decontamination

**Next Generation Bio-Point** Detection

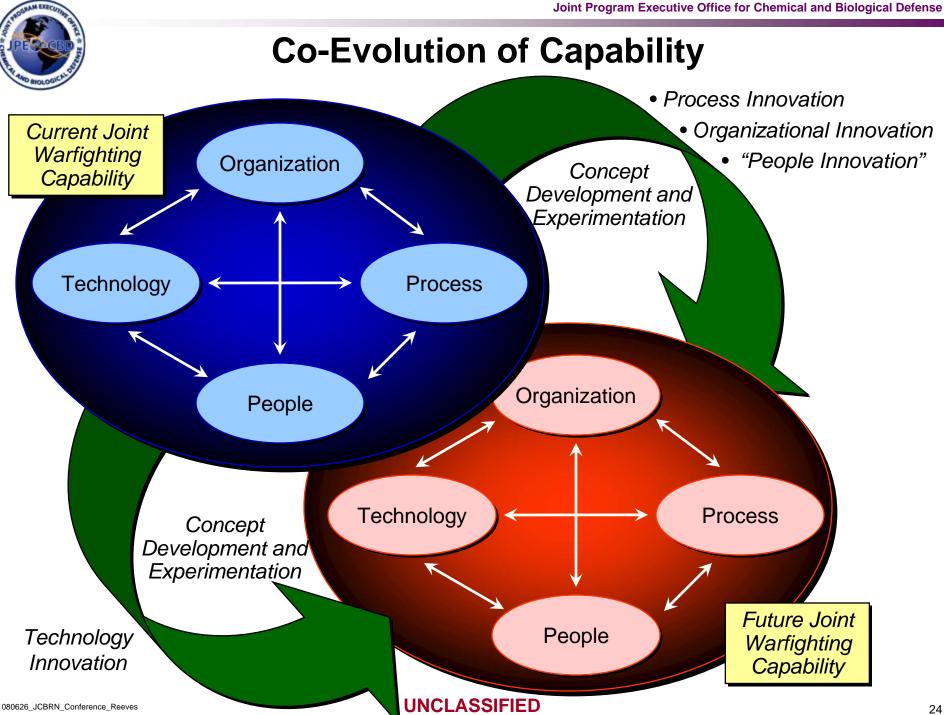
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Chem/ Bio



#### **Investment Convergence**







### **Operations Update**





#### **Major New FY08 Fieldings**





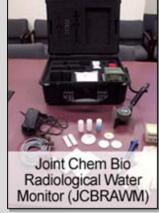














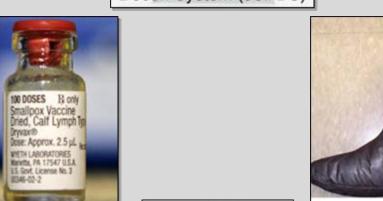


### Major New FY08 Fieldings (Cont'd)





Joint Service Personnel Decon System (JSPDS)



Smallpox Vaccine





Joint Warning and Reporting Network (JWARN)



Integrated Footwear

System (IFS)



Joint Effects Model (JEM)



### **Major Future Fieldings (FY09 & Beyond)**



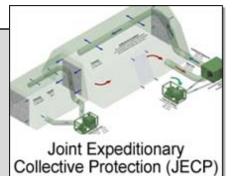
Integrated Commercial Intrusion Detection Systems (ICIDS)



Joint Material Decon System (JMDS)



Joint Chemical Agent Detector (JCAD)





Joint Service Aircrew Mask Rotary Wing/Fixed Wing



Joint Operational Effects Federation (JOEF) Program



Advanced Anticonvulsant Systems (AAS)



Detection System (JBTDS)



Joint Biological Standoff Detection System (JBSDS)



Bioscavenger -Increments 1 and 2



Plague Vaccine



Botulinum Multivalent Recombinant Vaccine (rBV A/B)

J.A.C.K.S.

#### - THE Source for CBRN Defense Equipment Information and Support

#### **NEW FEATURES:**

- Improved User Interface
  - -Better Navigation
  - More Efficient Layout
- JPEO-CBD Quarterly Magazine
  - -Subscribe
- CBRN COTS Equipment Information
  - Search Multiple Sources
    - Internal
    - External
- Deficiency Reporting (PQDR)



Information on requesting Training Equipment including the forms and contact information for using the Defense Accountability, Reutilization and Disposal (DARD) process.



#### **Contractor Logistics Support (CLS)**

- Effective December 3, 2007 SINGLE CLS Contract for:
  - Fox Nuclear Biological Chemical Reconnaissance System (NBCRS)
  - Joint Portal Shield (JPS)
  - M31A1 Biological Integrated Detection System (BIDS)
  - Joint Biological Point Detection System (JBPDS) Interim Logistics Support
  - Joint Biological Standoff Detection System (JBSDS) Interim Logistics Support

#### Benefits:

- Single Contracting Officer Technical Representative (COTR) at Unit Level
- Single Contractor for CLS
- Reduced CLS Customers



## Building the Future



#### Outlook

- Address Full Spectrum Threats
- Continue Interagency Collaboration
  - **S&T**
  - Advanced Development
  - Procurement
  - Standards (Physical/Medical)
- Continue Civil-Military Integration
- Implement Technical Architecture
- Maintain Technological Advantage



#### **New Technologies for Full Spectrum Threat**

Threat is Real and Expanding

- Our Responses Must be Adaptive and Innovative
  - Modular
  - Integrated Designs
  - Broad-based Protection
  - Broad-spectrum Capabilities

## The BEST Technnology and Equipment At the RIGHT PLACE At the RIGHT TIME

At the RIGHT COST

## MG Steve Reeves http://www.jpeocbd.osd.mil



Joint Program Executive Office for Chemical & Biological Defense (703) 681-9600

## Joint Capabilities to Combat Weapons of Mass Destruction

Joint CBRN Defense Conference & Exhibit Fort Leonard Wood, Missouri June 26<sup>th</sup>, 2008



#### Presented by:

Colonel Patrick J. Sharon, USA
Deputy Director, Joint Requirements Office for CBRN Defense
Directorate for Force Structure, Resources and Assessment (J-8), The Joint Staff

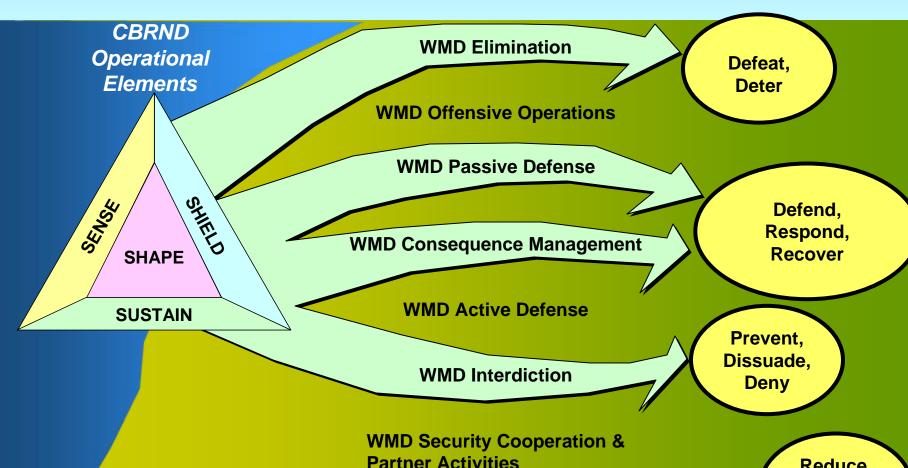
### **Agenda**

- CBRND Defense Operational Concept
- CBRND Core Capability Areas
- Modernization Emphasis
- JRO Focus Areas
  - CBRN Monitoring & Survey
  - Analytical Response Laboratory
  - WMD Consequence Management
  - Stand Off Detection
  - Developing Joint CbtWMD Leaders

## **CBRN Defense Operational Concept**



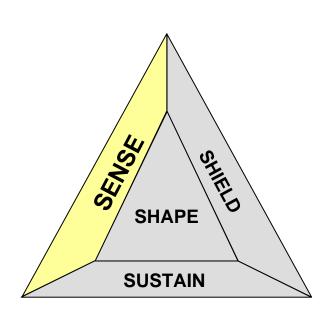
Military Strategic Objectives



**WMD Threat Reduction Cooperation** 

Reduce, Destroy, Reverse

## Detect, identify, and quantify the hazard



The capability to continuously detect, identify, and quantify CBRN hazards in air, in water, on land, on personnel, and on equipment or facilities.

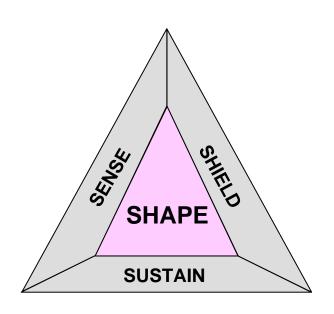
This capability includes doing this in all physical states (solid, liquid, gas).

## Detect, identify, and quantify the hazard



- Chemical Standoff Detection
- Biological Standoff Detection
- Chemical Point Detection
- Biological Point Detection
- Radiological Standoff Detection
- CBRN Reconnaissance
- Field Analytics
- Radiological Point Detection
- Medical Diagnostics

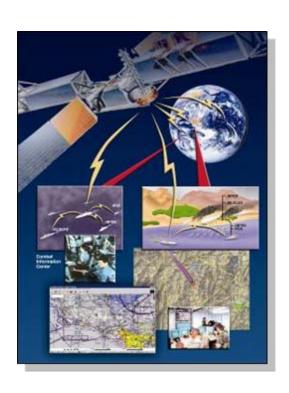
#### Characterize the hazard



The capability to characterize the CBRN hazard to the force commander.

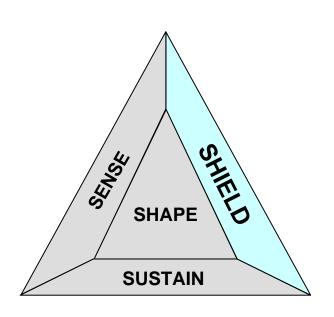
There are four CBRND core capabilities designated for the Shape area, and all DOTMLPF improvements to CBRND Shape can be categorized under one or more of these core capabilities.

#### Characterize the hazard



- Integrated Early Warning
- Battle or Operating Environment Management Systems
- Battle or Operating Environment Management Analysis
- Methods of Control
- Medical Surveillance

#### Protect the force



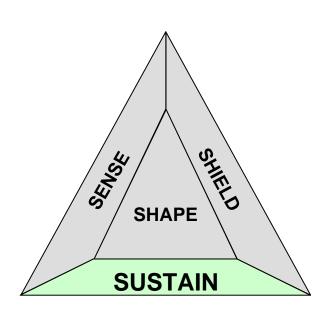
The capability to protect the force from degradation caused by CBRN hazards by preventing or reducing exposures, applying prophylaxis to prevent or mitigate negative physiological effects, and protecting critical equipment.

#### Protect the force



- Chemical Prophylaxis
- Biological Prophylaxis
- Radiological Prophylaxis
- Respiratory and Ocular Protection
- Percutaneous Protection
- Fixed Site Collective Protection
- Expeditionary Collective Protection

## Restore operational capability



The capability to conduct decontamination and medical actions that enable the quick restoration of combat power, maintain/recover essential functions that are free from the effects of CBRN hazards, and facilitate the return to preincident operational capability as soon as possible.

## Restore operational capability

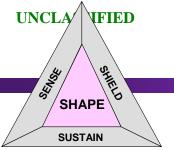


- Personnel Decontamination
- Fixed Site Decontamination and Restoration
- Equipment Decontamination
- Biological Therapeutics
- Chemical Therapeutics
- Radiological Therapeutics
- Hazardous Waste Control
- Remains Disposition

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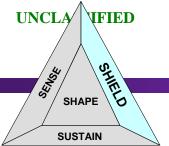
#### **Sense Modernization**

- Improve detection capability for NTA's, TIMs, lowest levels.
- Determine correct detector density and placement.
- Reduce size/weight/power needs, reduce false positives while increasing range and sensitivity.
- Integrate sensor suite.
- Enable laboratories to process large quantities of samples and analyze for CBRN hazards simultaneously.



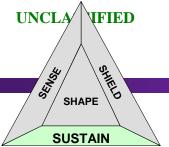
## **Shape Modernization**

- Expand network connectivity for CBRN-related data flow.
- Develop algorithms which accurately predict and assess hazards that support integrated medical and non-medical analysis.
- Automate planning tools/decision aids to assess CBRN hazard affects and impacts directly to personnel, equipment, and terrain.
- Improve medical surveillance to provide early biological attack warning interfacing military and civilian systems.



#### **Shield Modernization**

- Ensue personnel (including casualties), military working animals, equipment, and facilities are **protected** against WMD agents, including TIMs and NTAs with **minimal or no degradation**.
- Utilize Food and Drug Administration (FDA)approved medical countermeasures that provide broad-spectrum protection from CBRN agents and have an operationally acceptable incidence of adverse reactions.
- Integrate collective protection in all critical systems that support operating in an unencumbered environment.



#### **Sustain Modernization**

- Provide decontamination products against all CBRN threats with reduced personnel hazards, including better mass casualty decontamination capabilities.
- Develop improved decontaminants with less detection equipment interference that are environmentally safe, and are non-hazardous to sensitive equipment and electronics.
- Fully integrate expanded FDA-approved identification and diagnostic capabilities into command, control, computers, communication, and information intelligence systems.

#### **JRO Focus Areas**

- CBRN Monitoring & Survey
- Analytical Response Laboratory
- WMD Consequence Management

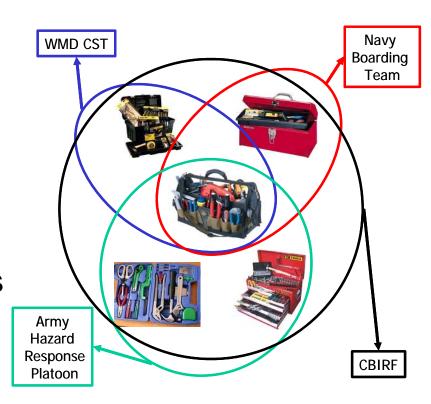


Developing Joint CbtWMD Leaders



## **CBRN Monitoring & Survey**

- Common set of components
- Configured into kits
- Supports each Services' mission requiring
  - dismounted CBRN reconnaissance
  - WMD confirmation or denial
  - characterization of a hazardous materiel event or accident
- Acquisition Strategy
  - Commercial-Off-The Shelf (COTS)
  - Government-Off-The Shelf (GOTS), and
  - Non-Developmental Item (NDI)



### **Analytical Response Laboratory**

- Current laboratory variants are not sustainable
- Common analytical capabilities across the CWMD portfolio increases confidence, sampling capability, and supports both Homeland Defense & forward deployed CBRN detection capabilities
- Key capabilities will focus on a modular approach
  - Analytical equipment
  - Analytical processes
  - Personnel staffing
  - Expandable laboratory design



### WMD Consequence Management

- Standardize and "institutionalize" CM capabilities
  - detection
  - identification
  - decontamination
  - protection
- Treat WMD CM as a "core" mission
- Complete DOTMLPF approach







#### **Stand Off Detection**

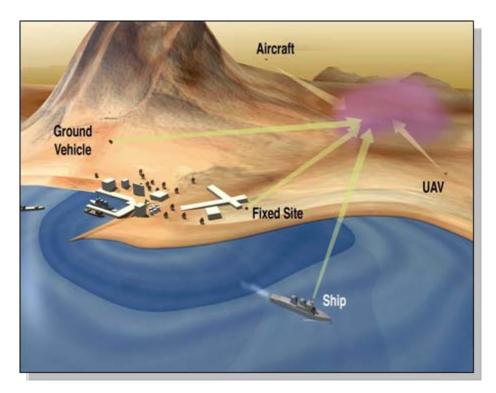
Continued high priority capability for warfighters

Includes CB and Radiological/nuclear – vapor &

liquid/solid

 Heightened interest in "pre-event" detection of SNM

 Technical challenges of distance, shielding, power, platform, etc.



### **Developing Joint CbtWMD Leaders**

- Problem Shortage of senior leaders able to plan and conduct CbtWMD operations in an uncertain environment
- Approach use education, training and exercises as substitute for years of experience and assignments



- Joint Professional Military Education (JPME) curriculum development support
- JPME course and exercise participation (Joint Forces Staff College; USMC Command and Staff College; Joint Flag Officers Warfighting Course)
- National Defense University Center for the Study of WMD JPME focal point for combating WMD
- COCOM staff training and exercise support USNORTHCOM and USSTRATCOM

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### **Questions?**



Patrick.sharon@js.pentagon.mil (703) 602-0843 http://jro-cbrnd.cbiac.apgea.army.mil







# Joint CBRN Combat Developer

U.S. Army CBRN School BG Tom Spoehr

Briefing for JCBRN Conference 26 June 2008



# Agenda



- Mission
- Authority
- Joint CBRN Combat Developer
  - Joint Experimentation and Analysis
  - Joint Threat Support
- Doctrine Support
- Training Support
- International Update
- Summary



### **Criticality of Our Mission**



"The gravest danger our Nation faces lies at the crossroads of radicalism and technology. Our enemies have openly declared that they are seeking weapons of mass destruction, and evidence indicates that they are doing so with determination. The United States will not allow these efforts to succeed...."

George W. Bush



### Mission



Conduct realistic experiments for the Department of Defense Chemical and Biological Defense Program by systematically exploring new and innovative combinations of medical and non-medical Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, and Facilities (DOTMLPF) capabilities.

to reduce risk and cost in materiel development



# **Authority**



Implementation Plan for the Management of the Joint Chemical Biological Defense Program

dated: 22 April 2003

"Para 3.4.8 -Through the JRO, serve as the Joint Combat Developer for the CBDP"







# Joint Experimentation and Analysis





### JEAD Completed Experiments



- Joint Expeditionary Collective Protection Develop/validate
   Ingress/Egress TTPs, final report dated Jun 07
- Trailer Mounted Cold Weather Decon Validate cold weather tactics, techniques and procedures for WMD-CSTs, final report dated Aug 07
- Joint CBRN Dismountable Recon System Validate organization & equipment for CPD, final report dated August 07
- WMD-CST LOE Validate Civil Support Team (CST) TDA, final report dated Sep 07
- Mortuary Affairs/Human Remains Decon System Rock Drill Develop CONOPS, final report dated Sep 07



### JEAD On-Going Experiments



- Air Crew Duration Validate TTPs and safety requirements (FY09 pending funding and availability of live air crews)
- Sensitive Site Exploitation/Assessment Linkage Develop & validate SSA to SSE hand-off Concept of Operations and Tactics, Techniques and Procedures\* (4<sup>th</sup> Qtr FY08)
- Future Joint Concept for CBRN Contamination Mitigation 2013
   & Beyond Develop Concept Elements for a "Draft" Contamination Mitigation Concept\* (4<sup>th</sup> Qtr FY08)





### JEAD Future Experiments



- Automation/Robotic Decontamination Develop & validate
   Concept of Operations and Tactics, Techniques and Procedures
- CB Distributed Early Warning System Validate Concept of Operations
- Unmanned CB Vehicle CONOPS Develop & validate Concept of Operations
- CBRN Intelligence Fusion Validate Concept of Operation
- Modular Mobile Laboratory Develop & validate Concept of Operations and Requirements



### Future Joint Concepts for CBRN Hazard Mitigation - 2013 and Beyond



- Objective: Discovery Workshop to describe how the joint force command will conduct CBRN contamination mitigation in support of the full rage of military operation to achieve assigned objective.
- JSTO Funded, JRO, JPEO, JPM-Decon supported
- **Location:** Arlington, VA
- Recommendations: The concept will inform Department of Defense components' capability development and drive joint experimentation.

 Result: It provides the framework for the JFC to estimate the proficiency and sufficiency for future CBRN passive defense and consequence management capabilities. It further refines relevant portions of the Joint Integrating Concept for Combating Weapons of Mass Destruction.





### Sensitive Site Exploitation/Assessment Linkage



- Objective: Determine what the requirements (e.g., information, material, etc.) to transition from the team performing SSA to the team performing SSE.
- JRO Funded
- Location: Aberdeen, MD

• Recommendations: Document capabilities needed to ensure a smooth transition from the team performing SSA to the team

performing SSE. Detailed instructions on both how to perform an SSA and the procedure for reporting and handing off the site need to be included in published Joint doctrine.

• Result: Identified and characterized tasks required for both SSA and SSE.







# Joint Threat Support





### JTSB Foundation



**Mission:** Develop and coordinate intelligence & threat support products as required by CBRND acquisition programs and experimentation.

#### **Key Accomplishments:**

- Completed 6 Joint Test Threat Support Packages (JSGPM, JCAD, JBSDS, JSLIST-JC3, JECP and JCBRAWM)
- JSLNBCRS pending (Working on vignettes with MCIA for the JTTSP)







# Doctrine Support to the Joint CBRN Force











### Joint CBRN Doctrine





**Joint Doctrine** 

**Combating WMD** 



**NBC** Defense



**CBRN Operations** 



WMD Elimination



CBRN
Contamination
Avoidance

**SENSE** 



CBRN Protection

SHIELD



CBRN Decontamination

**SUSTAIN** 



CBRN C2

SHAPE



CBRN Consequence Management

No longer just PASSIVE DEFENSE

**Stability Operations** 

**Major Combat Operations** 

Civil Support

Across the Entire Range of Military Operations...





# Training Support to Joint CBRN Force





## **Training**



#### **CBRN Courses**

- Providing Soldiers and leaders the adaptive skills to operate with all Services and designed to complement Joint Military Education
  - Supports professional military education and specific functional areas such as:
    - Civil Support Teams
    - USARC Domestic Missions
    - Technical Escort Missions
    - Stryker (L6)
    - Radiation Safety
    - Combating WMD
  - Designed to be Joint and Interagency focused
- Supports critical Homeland Security skills needed for CCMRF and CERFP



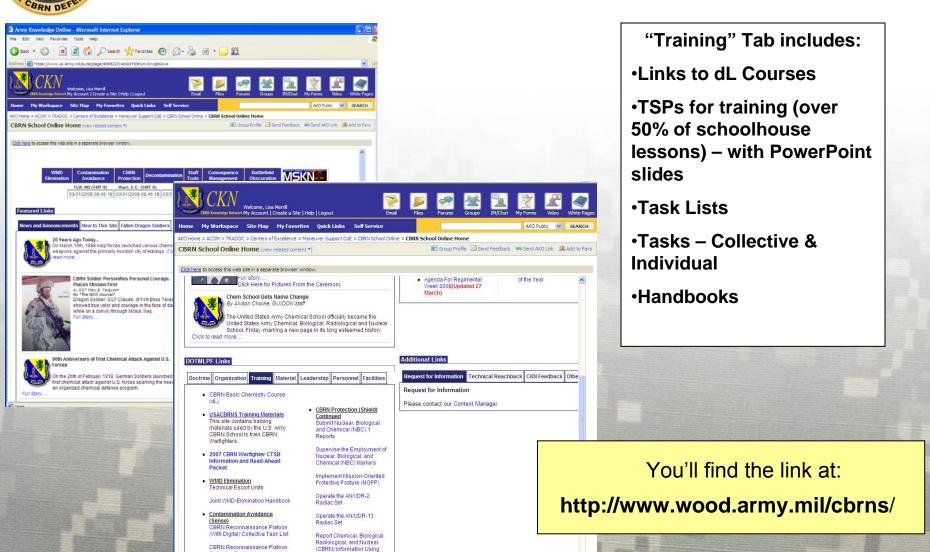
- All courses being updated to reflect the full range of CBRN threats and better addresses WMD-E and Consequence Management missions
- Expanding chemistry, biology and radiological sciences (Explosive Chemistry)
- Institutionalization of COTS protection and detection equipment
- Train the full suite of automated Warning/Reporting/Analysis systems
- All our courses are open to all Services





### **CBRN Knowledge Network (CKN)**





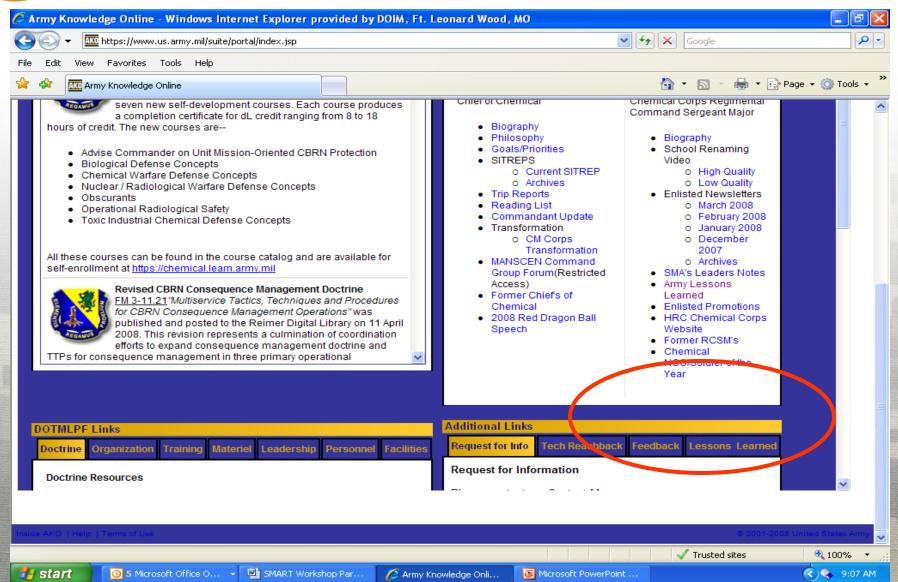
Collective Task List

Done



### **CBRN Knowledge Network (CKN)**

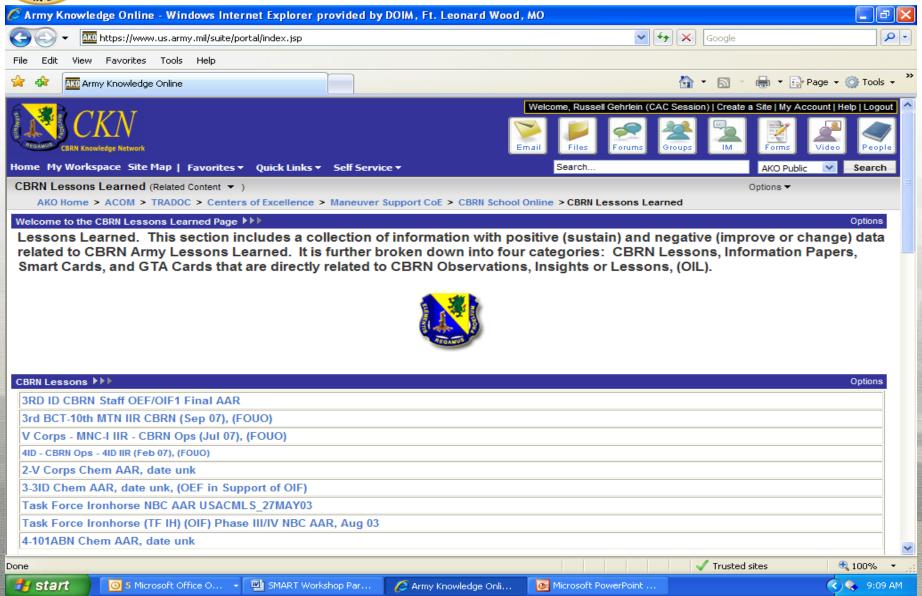






### **CBRN Knowledge Network (CKN)**









## International Initiatives





### **Key International Interactions**



- Training
  - CDTF
- CBRN International Commandants and Operational Commanders Conferences
  - Panama City, FL Oct 07
  - Czech Rep, Oct 08
- NATO Army Armaments Groups (NAAG)
  - CBRN Joint Capability Group
  - CBRN Detection Identification and Monitoring Sub Group
- ABCA America, British, Canada, Austria and New Zealand
- Head of Delegation NATO CBRN Training Working Group
- CBRN Subject Matter Experts Exchange (Israel, France, United Kingdom, Armenia, Canada, Germany and Saudi Arabia)
- Bi laterals (Current Japan, Korea, Poland and Czech Republic; Future - Singapore and Romania)
- STANAGS
- LNO









# **Operational Update**





### **Threats**









# **Transformation**













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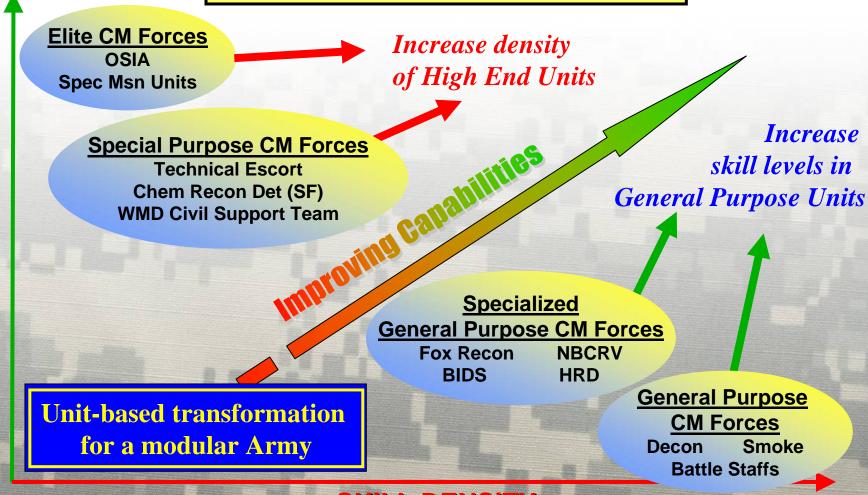
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### Transformation Strategy



### **More Capable ... Not Bigger**





## Summary



- The dangers our nation face and the importance of our mission require us to take a Joint and Interagency approach to the development of material solutions, doctrine, and training
- Realistic experimentation reduce the risk and cost of material solutions
- Our CBRN doctrine and training continues to transform in concert with Joint doctrine and the nature of the Contemporary Operating Environment





